The Magazine For Hewlett-Packard Enterprise Computing

HP Professional

NOVEMBER 1998

HP-UX

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Windows NT

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MPE/iX

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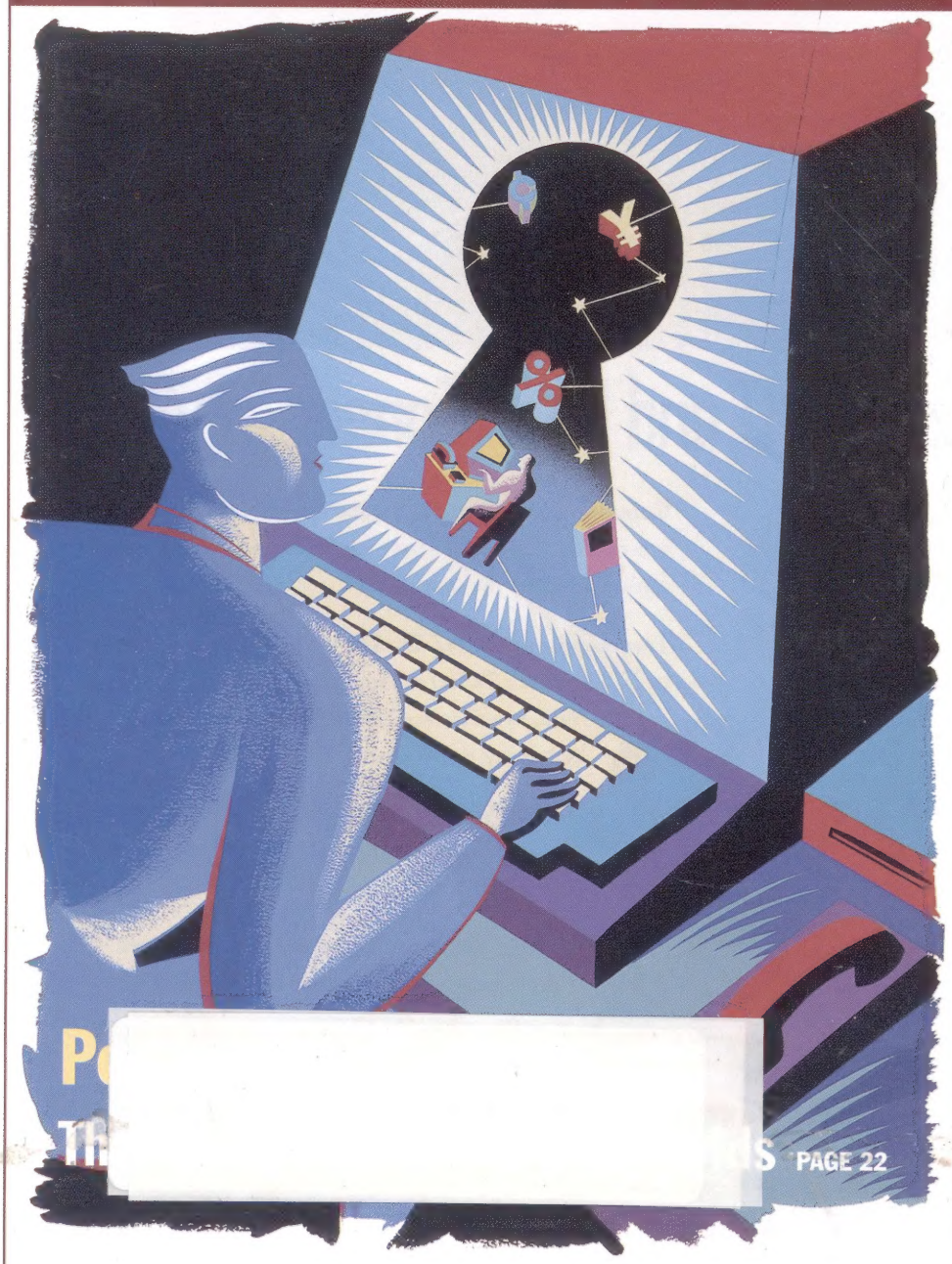
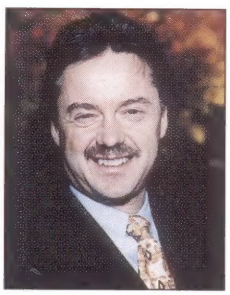
MULTIPLATFORM STRATEGIES





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Running Into Potholes...

On Your Road to NT and UNIX Connectivity?

Running into trouble trying to integrate your UNIX and Windows NT network? TotalNET Advanced Server (TAS) software will smooth the rough road ahead.

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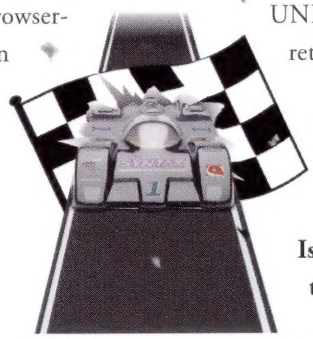
NT File/Print/Application Services: NT users access files and printers residing on UNIX servers using normal NT functions. TAS also enables NT users to access NT applications stored on a UNIX server.



Common File System: Data and applications are stored in a central TAS-based server where NT and UNIX users can easily access the same data.

Transparent to the NT Desktop: The TAS server is seen by NT users as a PC server, so users do not need to know UNIX to access resources on that server. No retraining is involved.

Scalability: TAS provides file/print/application services to thousands of NT and PC workstations.

Is your current solution steering you down the wrong road? Upgrade to TAS and save substantial time and money. Call today for details!

WINNER BEST

PC LABS ANALYST'S CHOICE TAS 5.0 June 2, 1997

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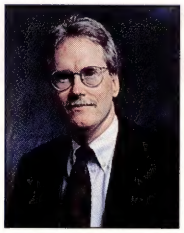

George A. Thompson
thompsonga@hppro.com

"And the men who hold high places, must be the ones who start,
to mold a new reality closer to the heart."

It's this editorialist's job to make connections — even when they enter the mind at 2:18 a.m. to the strains of a 1977 Rush song — between what's happening out there (business matters) and what's contained in the pages of this magazine (IT issues for the HP Professional). During the past year, I've spoken with business executives, IT consultants, managers of marketing and product persuasions and I've heard a constant refrain.

No, make that a resounding chorus. It goes something like this: "Getting the technology to work together is easy. Getting people to work together with the technology is the difficult part." Okay, no one is exactly singing "Closer to the Heart," the aforementioned Rush song; but recently, I couldn't help but notice similar sounding mantras coming from the pages of *Information Week* and *Forbes*. And even in more unlikely places.

EACH MUST DO THEIR PART

The first is an article titled "Management's New Paradigm" in Forbes (October 5, 1998). Written by management guru, Peter Drucker, it offers seven accepted business tenets and warns that "failing to ABANDON THEM (emphasis mine) in fast changing realities can cause your business to fail and your career to flounder." And don't we secretly know that, "The productivity of the knowledge worker is abysmally low." That's different from the vendor marketing material that I read. But more importantly, Drucker points out what we all intuitively understand: that you improve a knowledge worker's performance by "capitalizing on their strengths and their knowledge rather than trying to force them into a mold. They need challenge. They need continuous training. They need to see results."

Drucker also honestly admits that will "require above all, very much changed assumptions about what constitutes management." That's where *Working with Emotional Intelligence* (1998, Bantam Books) by Daniel Goleman, Ph.D. may hold some insight. In his first book, on the same subject, Goleman defines emotional intelligence as a "set of competencies that distinguishes how people manage feelings, interact and communicate." Now Goleman claims that emotional intelligence at work can make a competitive difference.

For example, when it comes to computer programming, that most basic of IT skills, the top 10 percent exceed average performers in producing effective programs by 320 percent. And those rare superstars, in the top 1 percent of programmers, produce a tremendous 1,272 percent more than the average. The deciding factor is in emotional intelligence terms — a willingness to collaborate, not compete, to stay late, to help others, to share shortcuts. Hmm, that's not what Dilbert would have you believe.

REFLECT IT IN THEIR ART

The emotionally intelligent will readily realize that it's the willingness to collaborate which makes the difference. Drucker concludes with what the emotionally intelligent already know: there is no single right way to manage people. Maybe we're just not as comfortable in dealing with the profits (and losses) of "knowledge or intellectual capital" as we are with capital gains. Intellectual capital, after all, doesn't compute in Excel.

IT is moving towards a consolidation where there will be far fewer UNIX versions to integrate with Windows NT, so porting and migration software like those in our hands-on feature this month are important for teaching UNIX and NT technologies to work and play well together. Then, it's up to you, your colleagues and your customers to mold a new mentality.

Research • Reports • Reviews

HP NEWS & VIEWS

AT PRESS

HP Reorganizes With An Eye On The 'Prise

In late October, HP combined the Enterprise Systems Group (ESG) and the Software and Services Group (SSG) into one organization — the Enterprise Computing Solutions Organization (ECSO). Under the direction of Ann M. Livermore, the ECSO now comprises HP's hardware, software and service businesses.

Within the ECSO, a new sub-organization has been formed — the Enterprise Systems and Software Group (ESSG), under the direction of Bill Russell, VP and general manager for the former ESG, that combines the hardware and software. Olivier Helleboid and Joe Beyers, general managers of the OpenView Business Unit and the Internet Software Business Unit (ISBU) respectively will now also report to Russell.

Nick Earle, VP and group marketing manager for the former ESG, will lead the marketing function for ECSO while working with Deb Nelson, his counterpart in the former SSG.

HP's current Customer Support and Professional Services business units will be combined into a new Services Organization that will also have service and support sales.

Windows NT Is History

After five years in the making, on October 27, Microsoft renamed and expanded its highly-touted NT operating system. Although still expected to ship in 1999, the OS has been officially re-christened Windows 2000.

The new product line is as follows: Windows 2000 Professional (formerly NT Workstation 5.0), Windows 2000 Server (formerly Windows NT Server 5.0), Windows 2000 Advanced Server (formerly Windows NT Enterprise Edition) and the new Windows 2000 Datacenter Server.

According to Microsoft's PR, the new naming scheme removes the confusion over the NT client and server versions while indicating that Windows NT is ready for all mainstream business users. There are no changes in the names for Windows NT 4.0 and Windows 98.

On the same day, HP announced that more than half of its HP Vectra Corporate PCs are shipped with Windows Professional (that is, Workstation NT 4.0) preinstalled, representing a 100 percent increase from just six months ago.

Open Skies Ahead For The HP 3000

On October 22, HP announced that it has acquired privately-held Open Skies, Inc. (Salt Lake City, Utah), developers of the OpenRes airline reservation system designed for small and medium-sized airlines internal use. Terms of the sale were not disclosed.

The acquisition marks HP's Commercial Systems Division entry into transaction-based business-process services. Open Skies is now an operation hosted by HP's Commercial Systems Division. It will continue to be based in Salt Lake City and all of its employees have accepted positions within HP. Roy Breslawski and Jim Sartain, formerly HP CSY division's worldwide marketing manager and R & D manager respectively, will likely retain their responsibilities and move to Salt Lake City.

The move reinforces HP's commitment to grow the 26 year old HP 3000 market. Worldwide distribution and ticketing cost for the airline industry are expected to be in excess of $35 billion for 1998, roughly 15 percent to 18 percent of total airline revenues.

IBM, SCO, Sequent Launch Initiative

On October 26, IBM IA-64 announced they are developing a new operating system for Intel's 64-bit processor that will fuse technology from their own AIX OS with components from SCO's UnixWare and Sequent's cc:NUMA platform and PTX operating system.

IBM will also transfer AIX technology to SCO's UnixWare and promote the offering in the UNIX on IA-32 market. The result, they hope, will be a single UNIX product line for IA-32, IA-64 and IBM microprocessors, from entry-level to large enterprise servers.

As part of the announcement, IBM and Intel are creating a multi-million dollar ISV fund that is aimed at helping software developers deliver middleware tools and application programs for this new UNIX. Several computer systems manufacturers, including Acer, CETIA (a subsidiary of Thomson-CSF), Groupe Bull, ICL, Motorola Computer Group and Unisys Computer Systems have announced their plans to use the new UNIX software.

Although HP believes it has a competitive advantage becasue of its work with Intel on IA-64, Intel is stressing that there is a level playing field.

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OpenView Plays On WBEM

HP is broadening its support for Web-based Enterprise Management (WBEM) standards, including the Common Information Model (CIM). This means that with WBEM support, OpenView Network Node manager will expand its reach to all heterogeneous WBEM-enabled devices on a network and provide network administrators with greater access to CIM data.

Key benefits to be realized include extensions to Network Node Manager's discover and mapping functionality, giving administrators access to CIM data through Web browsers and the ability to load and access data represented by other management applications in a CIM schema.

WBEM for OpenView Network Node Manager for Windows NT is expected to be available by the end of 1998.

url: www.openview.hp.com

HP Partners With ISPs

If you're an ISP who's ready to offer the next generation of Internet services (services beyond e-mail and Web hosting) to your customers, HP wants to partner with you as part of its Service Provider Alliance Program.

What are they offering? Technology collaboration, channels development, joint marketing and branding and cost-effective access to new customers and services.

How do they do that? The alliance provides ISPs with business, marketing, and technical assistance. HP technology collaboration enables partners to develop, demonstrate and deploy value-added services on HP systems.

Who's already on-board? How about AT&T, Belgacom, Consonus, Cybernet, Exodus, Frontier GlobalCenter, Netcom, Pilot Network Services, PSINet, Inc., Telstra and Usinternetworking.

url: www.hp.com/go/isp

SUN SPOTS HP-UX FOR HOTSPOT

HP has become the first vendor outside of Sun Microsystems to license Sun's new Java HotSpot virtual machine. HP will incorporate HotSpot in future releases of HP-UX. Under the terms of the agreement, HP will support the next release of the Java Development Kit (JDK) version 1.2 for HP-UX.

"Our customers are telling us that Java is becoming integral to their environment and that they want enterprise class performance and scalability," says Susan Henson, HP's Java program manager. "[HotSpot] will let them run hundreds if not thousands of users in that environment."

Henson says that HotSpot has been tested in HP's labs for several months and has achieved performance levels two to three times that of the classic virtual machine it replaces. "It looks like we'll reach orders of magnitude of five times greater with a little more tuning," she adds. The goal, she says, is to reach the level of compiled C++ applications.

The inclusion of HotSpot in HP-UX has given HP the opportunity to dust-off a 2-year-old marketing acronym, PRISM, which stands for performance, resilience, integration, security and manageability. "Java underpins PRISM very well," she says. "While I don't want to pigeonhole it into one of those categories, it certainly enhances the performance and integration aspects."

Henson says that JDK 1.2 should be in beta by January 1, with virtual machine add-ons available by spring 1999.

url: www.hp.com/go/java

HP'S STORAGE CROSSROADS

"Stress-free enterprise storage" is the latest strategy unveiled by HP's Enterprise Storage Solutions Group. Its focus is to help companies use storage to achieve operational and business objectives while making it a stress-free experience for IT managers.

They're so sure they can do it, they're offering a 100 percent written guarantee. The guarantee, which applies to all HP-branded enterprise-storage hardware (but not to some older products), offers a 90-day refund or replacement if the customer is not 100 percent guaranteed.

Other strategy offerings include: HP's Intelligent Storage Server, which enables disk-to-disk backup allowing users to share libraries among multiple servers; HP Fibre Channel Model 1010D High Availability Storage System; FC Hub Manager Software; 10-km Fibre Channel connectivity; DLT library sharing and boot capability; and utility automation which provides for scripting of manual tasks.

In a related announcement, HP and Crossroads Systems, Inc. (Austin, Texas) have formed a strategic alliance to develop Fibre Channel products for storage area networks (SANs) that will focus on increased speed, data availability and added storage management capabilities. Crossroad's Fibre Channel technology is incorporated into HP's SureStore Fibre Channel SCSI Bridge 2100 ER (scheduled to be available January 1) which allows the SureStore DLT 15-slot library to backup as many as eight servers.

urls: www.hp.com/go/storage
www.crossroads.com

HP Touches Netscape SuiteSpot

HP and Netscape have announced plans that will enable ISPs and telecommunications companies to deliver carrier-grade (they're calling it "mailtone") Internet services to their customers. HP will resell Netscape SuiteSpot Hosting Edition, which includes Netscape Messaging Server 4.0 Hosting Edition, as part of its Internet solutions portfolio for service providers.

In addition, the two companies are developing a Center of Expertise to be located at Netscape in Mountain View, Calif. that will help optimize performance of Netscape's hosting products with HP technologies. HP will provide its Smart Internet software and Domain Internet Servers and Netscape will bring its Hosting Edition software to the team. The center will be jointly staffed with specialists in the business-critical and technical needs of large ISPs.

THE STATE OF SOLID STATE

One of the time-tested truisms in the IT marketplace is the one about the inverse relationship between a particular technology's price and performance. That is, as the performance goes up over time, the price generally goes down. Nowhere in the industry is this more apparent now than with solid state disk technology.

Solid state disks makes use of DRAM chips in a high performance disk drive with the same form factor and interface as a magnetic disk. "Solid state is in the same technology life cycle as RAID was five to six years ago," says Gene Bowles, president and CEO of Solid Data Systems (formerly Database Excelleration Systems, Santa Clara, Calif.). "It looks just like a disk drive that's super fast."

DRAM prices have plummeted over 90 percent in the last three years — so low that solid state drive prices, once high enough as to be justified in only the areas that needed utmost performance, have followed suit to range in price from $10 to $25 per megabyte.

This combination of screaming performance at competitive costs, says Bowles, is accounting for an annual doubling of growth for the market. "It's now at a cost point to be utilized in open UNIX and Windows NT applications," he adds.

Quantum Corporation (Milpitas, Calif.) claims to own 60 percent of the solid state market. Bob Murphy, Quantum's manager of the Solid State Marketing Group says that the cost once was as high as $1,000 per megabyte. But now, "Users can integrate solid state into their RAID set or as an extension to their cache."

Murphy describes the traditional solid state use in financial, transaction processing applications — like those a stock trader might use. Asked where he sees growth in new industries, he cites the recent rise in the use of solid state as a "pseudo video cache." He adds that he doesn't mean as a video server, but "it's the only choice for fast video editing."

"With the growth of Internet applications, there's pressure for performance where solid state is the only choice," says Chris Smyth, product manager of solid state products for ATTO technology (Amherst, N.Y.). "It's not a luxury anymore."

Smyth predicts the eventual leveling-off of DRAM prices to "not as rapid a drop" as now, but sees huge increases in chip capacity on the horizon. Where 32MB and 64MB chip capacities are the norm now, there will soon be a 128MB chip. He also predicts stronger efforts on the parts of system manufacturers on making the "other components (like I/O channel) catch up to the performance of the disks."

HP'S BAAN VOYAGE

In a move to help corporate enterprises reduce applications time-to-production, control IT costs and enhance their industry leading position in the ERP market arena, HP has announced the availability of IT outsourcing services for the ongoing operation and management of Baan Company (Reston, Va.) ERP applications.

HP has more than 100 ERP installations worldwide. Baan and HP have developed a common, ISO 9000-based operations plan that establishes integrated response procedures, support processes and linkages between the two firms local and global support organizations. HP is offering consulting, education and training, integration-center services, high-availability support and outsourcing services for Baan customers.

Meanwhile, Bloomfield Computing Solutions (BCS; Bloomfield Hills, Mich.) has been named by HP as a preferred supplier of HP solutions for Baan implementations. BCS, to augment the announcement, has created a new outsourcing service for Baan and other ERP vendor clients. Aimed at the mid-market customers (companies with annual revenues ranging from $150 - $500 million), the service provides hardware, software and consulting support. BCS is the second-largest exclusive reseller of HP products.

news threads

OpenView Rules

It's nearly a $6 billion market and HP is ranked at the top. The market is network-management solutions and HP's entry is OpenView. According to data from Cahner's In-Stat Group's (formerly Business Research Group; San Jose, Calif.) Market Demand Study, HP OpenView Network Node Manager holds 57 percent of the 1998 market and outranks other products such as IBM NetView, Cabletron SPECTRUM and Sun Solstice/Sun Net Manager.

The report was based on 250 interviews with IT managers throughout the U.S. from government, finance, manufacturing, trade and utilities/communications markets.

HP, BMC, ERP, A-OK

HP and BMC Software, Inc. (Houston, Texas) are teaming to deliver management solutions for high-availability, mission-critical ERP application environments. BMC will extend its PATROL products to provide end-to-end applications management on HP-UX.

BMC's PATROL product line, specifically the Knowledge Modules, support all the major ERP applications from SAP, Baan, PeopleSoft and Oracle. All PATROL components are HP MC/ServiceGuard-compliant.

Fascinating RHYTHM

HP and i2 Technologies (Irving, Texas) have announced the port of i2's RHYTHM Supply Chain Planner to a 64-bit application for HP-UX 11. The new version of RHYTHM, dubbed 3.08A, provides large consolidated models and planning capabilities to suppliers, multiple-factory relationships and distributors.

SCHOOL DAYS FOR EPIC ARCHITECTS

We all know that starting a revolution isn't easy. You need help. When it comes to technological revolutions, companies, especially those like HP, usually turn to academia. To wit, this past August, HP, the IMPACT compiler group at the University of Illinois at Urbana-Champaign and the React-ILP Laboratory at New York University in New York City released the Trimaran Explicitly Parallel Instruction Computing (EPIC) compiler research infrastructure to the academic community.

The Trimaran team is helping universities overcome financial barriers to establishing EPIC compiler research programs by providing a research infrastructure at no cost. The infrastructure is expected to facilitate instruction and research in EPIC technology and to lower the barrier to entry for research and instruction in the parallel computing field. While many universities have infrastructures for superscalar and multiprocessor research, most are just beginning to study next-generation EPIC technology.

EPIC, co-developed by HP and Intel, uses predication, speculation, explicit parallelism and other qualities specific to EPIC technology to deliver superior processing performance and inherent scalability not available with conventional RISC architectures. "It's key to getting performance out of the next generation of computers," says Jim Carlson, IA-64 marketing manager.

EPIC is the technological foundation for Intel's Intel Architecture-64 (IA-64). In other words, IA-64 is an implementation of the EPIC architecture. "EPIC exposes the capabilities of the architecture to the compiler and gives the responsibility to the compiler for how a program works, to expose the possible parallelism, to reorganize a program and take advantage of that and do things that can enhance the parallelism while scheduling code to make it all parallel to the greatest degree possible," says Tom Christian, HP Lab engineer/scientist. But he cautions, "What EPIC architectures DON'T LIKE is surprises." Intel's Merced CPU, expected in the year 2000 is the first chip to use IA-64.

HP has been working with the University of Illinois for the past seven years, sharing information and using some of the technology developed there in their own research. Professor Wen-mei Hwu heads the University of Illinois' IMPACT compiler group.

IMPACT is unique in the compiler field because it's a complete working system, according to Christian. HP has worked for the past several years with Professor Krishna V. Palem who leads the React-ILP Laboratory at NYU and is focused on using EPIC in embedded technology. NYU has put the architecture together for the compiler infrastructure, developed a GUI as well as extended the capability of the parametric architecture.

HP believes that this cooperative academic research will produce significant gains in EPIC compiler technology and help realize the tremendous performance potential of EPIC architectures. The research infrastructure produced through these cooperative efforts is available free at www.trimaran.org.

HP's Compiler and Architecture Research team intends to continue its own compiler research under the direction of Dr. B. Ramakrishna Rau.

FIREHUNTER TURNS PRO

At last month's Internet World '98 in New York City, HP announced Firehunter/PRO, the latest addition to its end-to-end service management tool for ISPs and enterprise customers.

Firehunter/PRO is a scalable and customizable tool designed for ISPs who support more than 60 Internet servers and more than 20,000 clients. It comes standard with built-in service models for managing core Internet services such as e-mail, news and basic Web server functions.

It can be extended, says Bruce Fischer, HP's R&D manager for Firehunter, to provide SLA management and reporting for more sophisticated services such as VPNs, Web-hosting, e-commerce and voice over IP.

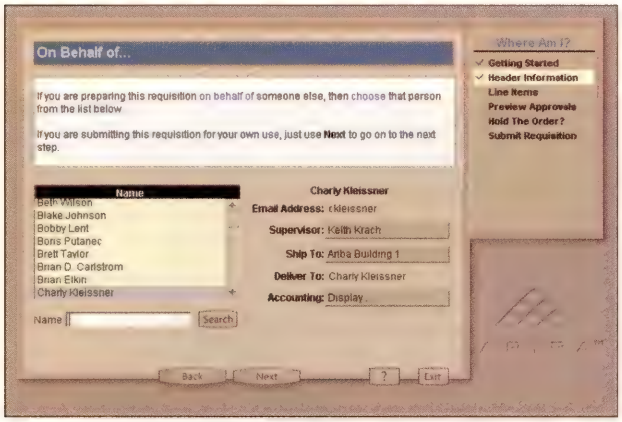
"ISPs need to guarantee service level agreements," says Fischer. "Clients anymore have 24x7 expectations. They can't be haphazard ISPs" and expect to grow market shares and revenue.

Fischer points to Firehunter/PRO capabilities that will enable large ISPs to offer managed value-added services backed by verifiable SLAs, charge more for guaranteed premium service offerings and differentiate their services with "carrier-grade, or Web-tone" performance and reliability.

Fischer says that HP has plans for "plug-in service management applications" that will be tailored solutions that fit particular ISP needs for value-added services. "We'll be able to quickly add plug-ins without redoing the ISPs whole infrastructure." He adds that plug-ins should start a sequenced rollout in early 1999.

Firehunter/PRO sells for $100,000. It is offered as a turnkey platform that is customized, configured and delivered through HP's Solution Services Organization.

Ariba ORMS Supplies The Goods



ARIBA ORMS 5.0

- Automates the process of purchasing operating resources.
- Runs on HP-UX, Solaris, and Windows NT servers and on browser-equipped Intel 486 workstations with more than 32MB of RAM.
- Price starts at $750,000 and is licensed according to the number of purchase orders or expense reports generated by the client.

Ariba Technologies

1314 Chesapeake Terrace
Sunnyvale, CA 94089
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AdLink

Minimizing costs to maximize profits is a full-time occupation in the corporate world. Operating Resource Management Systems (ORMS) or supply management are attempts by corporations to minimize the costs of acquiring operating resources — expenses that don't generate revenue. They include Maintenance, Operating Supplies (MRO), capital equipment, services and travel expenses and can account for 30 percent of all expenditures.

Ariba ORMS application suite, (Ariba Services, Ariba Capital Equipment, Ariba MRO and Ariba Travel and Entertainment) automates the purchasing process and consolidates the list of available suppliers into a single online catalog.

Traditionally, purchase orders pass from one desk to another and maverick buyers bypass Purchasing in an attempt to expedite their orders. Consequently, the cost of processing a single purchase order has ballooned to more than $150 in many companies. With its underlying Network Application Architecture, Ariba ORMS is able to utilize a company's existing intranet to systematize the process.

The process begins with the company-created catalog of authorized products and services and approved suppliers. When a department needs an operating resource, it browses the catalog, selects a product and supplier and creates an electronic purchase requisition, which is transmitted automatically via the company's intranet to all the approving managers.

Once approved, the requisition is converted into a purchase order, transmitted to Accounting and sent to the supplier via the Internet. The cost of processing a purchase order can decrease to $25.

"We were undertaking a major re-engineering and restructuring effort of our corporate procurement organization," explains Patrick Guerra, vice president of corporate supply management at AMD, a Sunnyvale, Calif.-based producer of integrated circuits. "Ariba offered us the opportunity to eliminate transaction processing."

Guerra says AMD was able to "shrink the supply base, aggregate the demand, make a commitment to the supplier and get lower costs." He estimates that the new supply management process, with Ariba ORMS, saves AMD as much as $37 million per year.

One reason for the application's success is its intuitive walk-up interface, says Dawn Buchanan, an associate partner in the Supply Chain Management Practice at Andersen Consulting, a reseller of Ariba ORMS. "Not only does that mean you can distribute it widely, but the training is not needed. You can put it in the field and not spend a lot of time and money training individuals."

Buchanan warns that Ariba ORMS does not work well for auto-replenishment, however and Guerra says that the catalog-management capability is time intensive for both the supplier and the customer. But both recommend Ariba ORMS as a vital component of an ORM strategy.

Jeff Dodd,
Contributing Author

IT = Inspiring Technology And Teamwork

EchoStar's IT Group Shines Brightly But Doesn't Burn Out

BUSINESSES EXPAND so rapidly that IT resources are stretched. Savvy hardware and database applications carry a business only so far. So, how did EchoStar Communications move 350 people over a weekend into a shopping mall, transforming it into a new headquarters campus?

Tom Ryan

The business of delivering entertainment to households via satellite transmission is booming. Being third to market in the spring of 1996, EchoStar Communications Corp. (Littleton, Colo.) moved quickly to gain market share, capturing over 33 percent of the new subscriber market. Because EchoStar is vertically integrated, the IT organization must support:

- an engineering and design company designing receivers and antennas;
- a manufacturing company (outsourcing actual unit assembly but managing the process and doing some final packaging in-house);
- a distributor for the receivers;
- an owner and operator of the uplink facility;
- owners of satellites;
- operators of customer service centers;
- contract negotiators (so EchoStar can own the relationships with content providers like Viacom, Paramount Studios and HBO).

EchoStar's market performance has been a hit with investors who've boosted stock values by over 50 percent since the beginning of 1998. But, how does IT support growth on this scale without coming apart at the seams? Having an understanding of the shared processes becomes critical when, in EchoStar's case, we ask for "the impossible."

Because IT organizations are neither independent nor completely self-sufficient, developing strategic vendor relationships is critical. But there are not many vendors capable of answering a requisition for large, multiprocessor, mid-tier servers and delivering it the next day; or sending senior database administrators to work overnight and weekends to team with in-house personnel to resolve problems; or reprogram a VRU application on the spot.

It's no longer unusual to build relationships with vendors to an extent that was unheard of ten, or even five, years ago. There is a bottom-line value to be gained by taking the time to work with vendors.

For example, HP's responses to EchoStar's new system deployment schedules over the last two years included providing over 20 HP 9000

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Model K400s and K500s on very short notice, backfilling with loaner units and devising other temporary strategies to fill the gaps. Similarly, Oracle Corporation augmented EchoStar's staff resources and supplied project management expertise.

Working For The Weekend

During a weekend move into EchoStar's new Riverfront facility — while the company was in the middle of rolling out its spring promotion — teams from HP, Oracle and other vendors were tightly coordinated with various EchoStar teams so the installation and hook-ups of the infrastructure were orderly and swift. Similar effort paid off in the summer of 1996 when the company created a 250-seat customer service center from scratch — in less that two months — and again in early 1997 when the service center was expanded by an additional 250 seats, also in less than two months.

Recently, EchoStar's IT group converted from Oracle Financials 10.5 to 10.7, while at the same time converting to new servers running MC ServiceGuard and a new disk farm from EMC. Oracle consultants partnered with EchoStar personnel to lead the conversion effort, which demanded multiple test conversions and tight coordination of IT and business area personnel. HP provided high-level technical support, as this was the first implementation of the MC ServiceGuard strategy.

It became a major cooperative effort between EchoStar, HP, Oracle, EMC and other contractors. The entire conversion was choreographed *to the minute* and accomplished with less than 52 hours downtime for the organization (over Memorial Day weekend).

EchoStar's success story began two years ago, when it faced the daunting task of making massive changes to its computing environment just to supply the tools-of-the-trade to new employees and improve both system response times and reliability. At the same time, the IT organization was learning the recently purchased Oracle financial modules.

Placing a high priority on adding processing "headroom" and making immediate improvements in response times meant adding capacity. The answer was to purchase an additional server and split the database from the applications. From the decision to add the first of many additional servers until it was installed and operating spanned only 14 days — a pace most IT personnel would agree is extremely fast.

The accelerated pace resulted in a number of expedited steps. Configuring, acquiring budget approval (for what was at the time, one of HP's most advanced servers) and collaborating with HP to requisition, build and deliver the server was done in just a few days so it could be

THE FOUR TENETS

The pace of the Direct Broadcast Satellite industry requires around the clock dedication and commitment. Four tenets provide mission-control and guidance for EchoStar's IT group:

1. Information systems must be available and stable. This tenet is the basic block-and-tackle of all IT organizations and without it, all other initiatives are severely hampered.

2. Focus on value. For every penny EchoStar IT wins in a budget, there must be tangible, visible benefit. Each acquisition of new equipment, software, or services must clearly demonstrate how the investment helps EchoStar support the customer base, gain new distribution channels, improve service for dealers, distributors, or subscribers, etc.

3. IT teams' makeup and deployment aims to promote increasingly faster responses to organization requirements. This is specifically spelled out at EchoStar: every individual has the opportunity to make a difference and as such, they are required to make a difference.

4. An advanced architecture is required which provides a framework for business processes, responsibilities, application software integration and technology infrastructure. Without a comprehensive blueprint, IT's rapid responses more often result in non-integrated point solutions that can easily collapse a business group. With an architectural framework, each effort weaves another scene in the overall pattern of the IT tapestry.

Two years ago, support for all of EchoStar's enterprise applications was limited to just three UNIX and six Novell servers. The hardware environment was severely constrained with applications and databases running on a single server. The systems crashed daily.

Today, EchoStar runs applications supporting the complex range of company business and marketing processes on 23 new HP 9000 D- and K-class servers and 45 HP NetServers as well as Dell and Gateway NT servers. Our network encompasses over 4,000 nodes extending to over 20 domestic locations and to Europe.

— T.R.

installed, tested and run. At the same time, the IT group was developing plans to load the company's database on the new system and repoint all of the virtual connections.

And this took place while EchoStar added new database customers and business was growing at full speed. In 1996 EchoStar earned just over $200 million in revenue. In 1997 the company approached $500 million and this year most analysts are predicting over one billion dollars. During that time, the workforce ballooned from 600 to 2,500 employees.

EchoStar attributes this growth to innovations made with digital set-top receivers, the high appeal of satellite services to businesses and education and features that enable PCs to connect to the satellite dish for digital-quality picture and sound

Other illustrations of how an open systems environment can adapt include converting to a switch-based NT corporate LAN from a router-based Novell network in just six weeks at a time when our network included just under 1,000 nodes. And later, when the company grew to support 1,800 nodes, we simultaneously converted from Windows 3.11 to Windows 95 and from Lotus cc:Mail to MS Outlook and MS Exchange in only nine weeks.

The Need For Speed

In our market, IT solutions must go from need to implementation in days — not months or even weeks. To address the enormous complexity and time constraints, we laid out an overall application and environmental architecture. Within this framework we encapsulated entire applications (like Oracle's Inventory Control System), as objects and then integrated them into a stable, non-volatile, overall architecture. Designs are embodied in rule sets. Non-integrated point solutions are prevented.

In May 1997, EchoStar undertook a major overhaul of distribution processes for our hardware products. To make the economics work, an entirely new system was required to calculate and distribute sales incentive and commission payments to EchoStar's dealers and distributors.

The environment went from one of cutting 2,000 checks a month to one requiring up to 10,000 payments each week. Even though we stretched our capabilities to include electronic fund transfer (EFT), statements were still needed. A secure Web application was deployed to provide detailed payment and accrual information to our dealers and distributors.

The Frame Up

More importantly, the team applied architectural principles to define the framework for the solution. Rather than design an application that distributes a fixed dollar amount based on activation of a digital receiver, we architected an environment that calculates value based on events and distributes the value to a particular entity, with value, events and entities defined by rules.

For example, value could be defined as dollars, points, or merchandise. Events could be the activation of a receiver, activation of a specific service, or attainment of a volume tier. Entities could be dealers, distributors, OEMs, brokers, or even subscribers.

By architecting an environment, rather than designing an application, development time was greatly reduced with initial components placed in production in as little as three weeks and the first disbursements made within six weeks.

It now takes less than a week to roll out a new disbursement program with the majority of the time spent defining the business rules. Over the past year, EchoStar has rolled out 14 different disbursement programs, from advertising co-op programs to special installation reimbursement incentives — all with no additional coding.

—Tom Ryan is the CIO for EchoStar Communications Corp.

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There's Something About Java Compatibility

Java's Role In Enterprise Computing Leaves Some Things To Be Considered

CLEARLY, JAVA PROVIDES tactical advantages in specific situations. It has introduced novel solutions for very specific problems, such as security. And we all want to see Java evolve into the enterprise-wide, strategic development environment that its advocates have talked about from the start. Don't we?

Chip Kelly

By now, you're probably beyond asking, "Why Java?" If not, you should have discovered that programmer productivity and platform independence is the answer. But, "At what price?" is the question for the 21st century.

The value of Java to a programmer is productivity; the way it allows developers to generate easily maintained, clean source code that can go into production quickly. This is possible because the Java programming language provides application developers the low-level granularity of languages like C and C++, combined with high-level features like security, object-orientation and garbage collection.

SPAGHETTI CODE

From a language perspective, Java does not use pointers, freeing developers from countless lines of code to manipulate them. Although this is considered by many to be the best feature of the Java language, others (typically steeped in Assembler or C) feel that programming without pointers is like spaghetti without meatballs. They can't imagine a change from the traditional recipe.

Java's garbage collection algorithms provide a good example of advanced functions. Java's creators had the foresight to free developers from the mundane task of allocating and deallocating memory for their application. Garbage collection saves significant development time for most production applications.

However, some purists argue that active and efficient memory management makes garbage collection irrelevant. The garbage collector has also been accused of poor performance due to untimely collection. Scheduling garbage collection is crucial and as a result, Sun Microsystems has delivered newer versions of the garbage collection algorithm. This change should mitigate these performance problems.

Productivity is a significant factor influencing the popularity of Java as a programming language, but the greatest number of lines of Java code are written because of its platform independence.

The notion of "write once, run anywhere" grabbed everyone's attention three years ago, but in reality, "write once, test everywhere" is a more accurate description of distributed Java applications. What's interesting is that the Java language itself does not prevent applications from being easily ported.

However, the implementation of the Java virtual machine (JVM) on specific platforms and browsers does create idiosyncrasies that application developers must deal with. Combined with the breakneck speed at which Sun Microsystems is issuing new releases of the Java language, developers can find deployment of distributed Java applications very tricky.

VIVE LA DIFFERENCE? NOT!

Fortunately, there are a number of ways to minimize the differences among JVMs. If an application is browser-enabled and you can determine which of the two prominent browsers are used, writing the application to suit that browser makes sense. Granted, this will not work when the user's browser is unknown.

Sun is attempting to address this issue directly with new components such as the Java Plug-in. The Plug-in allows applications surfaced by a browser to replace the browser's virtual machine selectively with a virtual machine from Sun Microsystems.

By downloading Java virtual machines from the Web, the Plug-in provides the specific version of the Java virtual machine that an application requires. This process allows developers to bypass the problems caused by multiple vendors providing different virtual machines. The availability of the Java Plug-in is a boon to ISVs like SAS Institute (Cary, N.C.) who need to balance the creation of stable production quality software with the rapid pace of change. Java applications that are executed from the command line require more effort because there is no equivalent of the Java Plug-in for standalone applications.

Execution Methods

Currently, there are three ways to ensure compatibility with different platforms:

1. Distribute the JVM of your choice with the application, guaranteeing execution of your Java code. This increases the size of your deliverable and impacts installation and maintenance.

2. Distribute different Java bytecodes for each platform that you want your application to support. This choice makes Java seem just as difficult to use in heterogeneous environments as any other language.

3. Write your application to comply with the 100 percent Pure Java test suite, and have it tested for logo certification.

While applications that are logo certified are not guaranteed to run with all JVMs supplied by JavaOS licensees, you greatly increase the probability of platform independence.

Java programmers may experience higher productivity measured in clean lines of code produced. However, the Java language uses different memory management and pointer conventions, requiring veteran programmers to adopt new techniques. And the wide range of decisions necessary for application portability demonstrates that platform independence comes at a cost.

—Chip Kelly, a member of SAS Institute's Java Futures Committee, is also the Institute's program manager for Web Enablement.

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Good ERP Comes In Small Packages

DCI And Baan Downsize Enterprise Resource Planning

WITH INDUSTRY REPORTS of around $4.7 billion being spent on ERP education and training this year, small company IT managers are wondering how to deploy ERP solutions comparable to those found in larger companies. Can they succeed with smaller scale investments and a do-it-yourself approach? DCI did.

Bud Maciekowicz

Digital Computer Integration Corp. (DCI; Plano, Texas) recently completed its deployment of a full suite of integrated "solutionware" for manufacturing, distribution, finance and enterprise management. And in record time (11 weeks). Using a realistic budget for this $20 million company, DCI's most serious challenge for significantly improving the accuracy of sales bidding and project cost forecasting was successfully implemented. And it also equipped DCI for other, far-reaching benefits not previously possible — without more costly solutions.

DCI sales were booming and product development evolving and expanding rapidly. Yet prior to the May 1998 implementation of Baan's Machine Building Industry solution (installed on a HP LX Pro NetServer), the company suffered internally from all the symptoms of an outgrown IT system. At any given time, DCI personnel track as many as a dozen orders at once, involving over several thousand parts, in order to meet delivery schedules or make order commitments and cost forecasts or reports. All these concurrent user processes are supported on the HP LX Pro NetServer.

Rack And Ready

Less than ten years old, DCI blends off-the-shelf UNIX and PC computer hardware with its own technology for "ruggedized" portable and rack-mounted computing systems used in military or commercial aircraft, ships and submarines, all-terrain vehicles, as well as industrial and other field environments. Though small in comparison to some of the company's computer manufacturing partners, DCI is preeminent for making these computers withstand 25g shocks and operating in temperatures from -20°C to 50°C (-4°F to 122°F).

"Our sales people continued to make bids on projects based on prior experience, but as customers required new and different products they did this with decreasing confidence in the accuracy of their bids," observes DCI sales executive Greg Gray. A decade-old accounting package with rudimentary inventory control hogged IT resources to the point where intercom announcements would periodically ask the IT staff to logoff from the system so a particular program could be run. Worse, there were no tools for managers to use for tracking costs accurately, no information for analyzing project status on the shop floor, no automated way to track inventory.

It was becoming too easy for the company to lose money by underbidding or lose projects by overbidding. The company's early, informal management controls were rapidly losing effectiveness due to its growth and increasing product sophistication. "And virtually everyone in the company, not just those in sales and management who faced pre-existing limitations, knew we also faced a Year 2000 compliance problem," according to Darin Dannelly, DCI's software business development director. "In early 1998, with a two year cushion, the management group began addressing the issue in earnest."

As discussions of the Y2K issue progressed, the "wish list" of desirable new system features grew. The six-person steering team rejected any kind of quick programming fixes for Y2K, seeking more sophisticated solutions instead. The team reviewed several big-name, tier-one ERP packages and immediately recoiled in sticker shock. The investment was simply larger than a relatively small firm could justify.

Yet DCI's product capabilities

were increasingly sophisticated and the company had specific needs and improvements in mind to automate, integrate and streamline manufacturing, distribution and finance. Should the team go to two-tier or three-tier? Those packages would perhaps not be so complex, but might still improve dramatically upon the current system — at a more palatable price.

Meanwhile, Baan Midmarket Solutions (BMS) had been experimenting with taking the value of Baan's ERP software for large companies and making scalar and modular adjustments to address the needs of the medium- and small-sized companies. Says Dannelly, "the great change and innovation that earned particular attention at DCI was the ready-to-run, pre-configured business process templates tailored to specific vertical markets."

DCI became a pilot site for the Machine Building Industry solution and implemented it as a Baan-on-Board solution, on the HP NetServer platform and Microsoft SQL Server database. DCI also took advantage of Baan's concept for streamlining deployment through Dynamic Enterprise Modeling (DEM).

DEM is "orgware" that DCI used to model its organization and match business processes throughout all departments to the machine industry solution. The certified solutions benefit smaller companies, both in reducing the cost of the application and assuring successful implementation, in a much shorter time.

Indeed, less than 12 weeks for implementing an enterprise application is extraordinary, especially compared to media studies of other solutions taking as long as two years. Even the customary deployment cycle of five to seven months can be an excessively high barrier for DCI and other comparably sized companies that simply cannot delay IT improvements any longer.

DCI began by activating and becoming accustomed to key portions of the package for distribution, manufacturing and finance. Distribution encompasses sales, ordering, purchasing and inventory, among other pieces. For the first time, the sales force can create customer quotes that can be promptly and automatically integrated into a complete sales order. A typical point of potential order delay and manual keying errors (from the former independent spreadsheet quotes to separate-system order) is eliminated.

The former inventory system could produce a list of parts and quantities, but without any reference to where the parts were — whether on the receiving dock, shipping dock, store room or production floor. Now, inventory is tracked through precise location. The new system of bills and materials tracks receipt through where goods are being manufactured to point of shipping; even quality control checking is now an automated part of the system.

One of the most significant benefits to DCI has been the ability to standardize costs on their products as never before. Instead of sales people talking to engineering and shop managers to price a new product and estimate production timing — an "ad hoc," lengthy and inexact procedure — the system information is at their fingertips. The sales force can now go out to customers and sell the products.

Product costing is more accurate. The process forced engineering and production to improve their precision in scoping and tracking operations, labor and parts going through the system. Formerly hidden costs in the production cycle (redesigning, warehouse costs, materials replacement) are now being assigned to the products where they belong. Time-to-build variances can now be analyzed and rates for different tasks and work centers can be changed, so that routing for a particular product can be created with the most accurate costs.

The sales force now knows in advance precisely what products they are selling, what the margins are and what their commissions will be. They are much more comfortable going into a sales situation knowing they will likely not underbid or overbid.

Manufacturing, planning and forecasting used to be a simpler, informal process, based on prior experience. Today, the distributed nature of operations and attention to profitability catalyze improvements. So, small companies can use ERP solutions and accomplish IT transformations as adeptly as the largest corporations.

—Bud Maciekowicz is president of Digital Computer Integration Corp.

BAAN MOTS

A component of the certified solution deployed by DCI is the Baan application server, a HP NetServer LX Pro with four-way CPU, configured with 24GB of disk space (mirrored) and 500MB of RAM. "Because DCI's minute-by-minute processes in all departments revolve on the hardware," notes Greg Gray, "the choice of hardware didn't go unnoticed, not even in the sales group. It also minimizes administration costs."

DCI selected the Microsoft SQL database. Full Baan-on-Board features include processes and tools for sales, development, manufacture, delivery and maintenance of machine products. The integrated planning tool supports accurate and much improved control over production processes. An additional HP LX Pro supports Novell network applications.

A CONVERSATION WITH NICK EARLE

George A. Thompson

In our September issue, we launched HP ProFiles with an exclusive interview of Lew Platt — the big guy at HP. This month, Nick Earle, Vice President and group marketing manager for HP's Enterprise Systems Group, reflects on HP's computing destiny. In San Diego at HP World, Nick and I talked about Merced, IA-64 and, Explicitly Parallel Instruction Computing (EPIC) the once and future CPU architecture for the next century.

I'm sure you'll agree that Nick was quite forthcoming about HP's advantages regarding IA-64: we'll have the best compilers. On Sun Microsystems: their users will be forced to move to big endian Solaris. On IBM: we are making the HP 9000 look like MVS. And on Compaq: they finally have a good strategy, similar to HP's.

HP Pro: What's HP's value-add going to be with Intel's IA-64?

N.E.: Everyone will have IA-64, because Intel's volume production means that you can't compete without it; particularly when you look at the fact that it's going to run UNIX and NT faster than RISC and IA-32.

Three things that are going to be important in the future [with IA-64] are scalability, availability and manageability. And that's where HP will have a lead over our competitors with IA-64.

HP Pro: What about performance?

N.E.: The performance of EPIC is determined by the parallelism you can inject into the source code at the static compiler stage. In the UNIX world, because you have a different binary for each version of UNIX, HP-UX object code is going to be tuned for an EPIC-based, parallel environment. So, we're going to have a performance edge [too].

HP Pro: What's Intel's position?

N.E.: Intel is desperate to point out that it's a level playing field, but it's only a level playing field for SPECint and SPECfp [performance benchmarks], which is at chip level. Every vendor in the world using IA-64 chips will have the same SPECint and SPECfp. But TPC-C, TPC-D or OLTP and data warehousing are functions of system design and that's primarily driven by the compiler.

HP Pro: Why do you think you'll have the best performance?

N.E.: We started with the compilers in 1989 as part of a HP Labs project. By the time EPIC hits the streets, or with Merced — the first chip — [HP] will be in the 11th year of compiler design for optimizing in parallel environments.

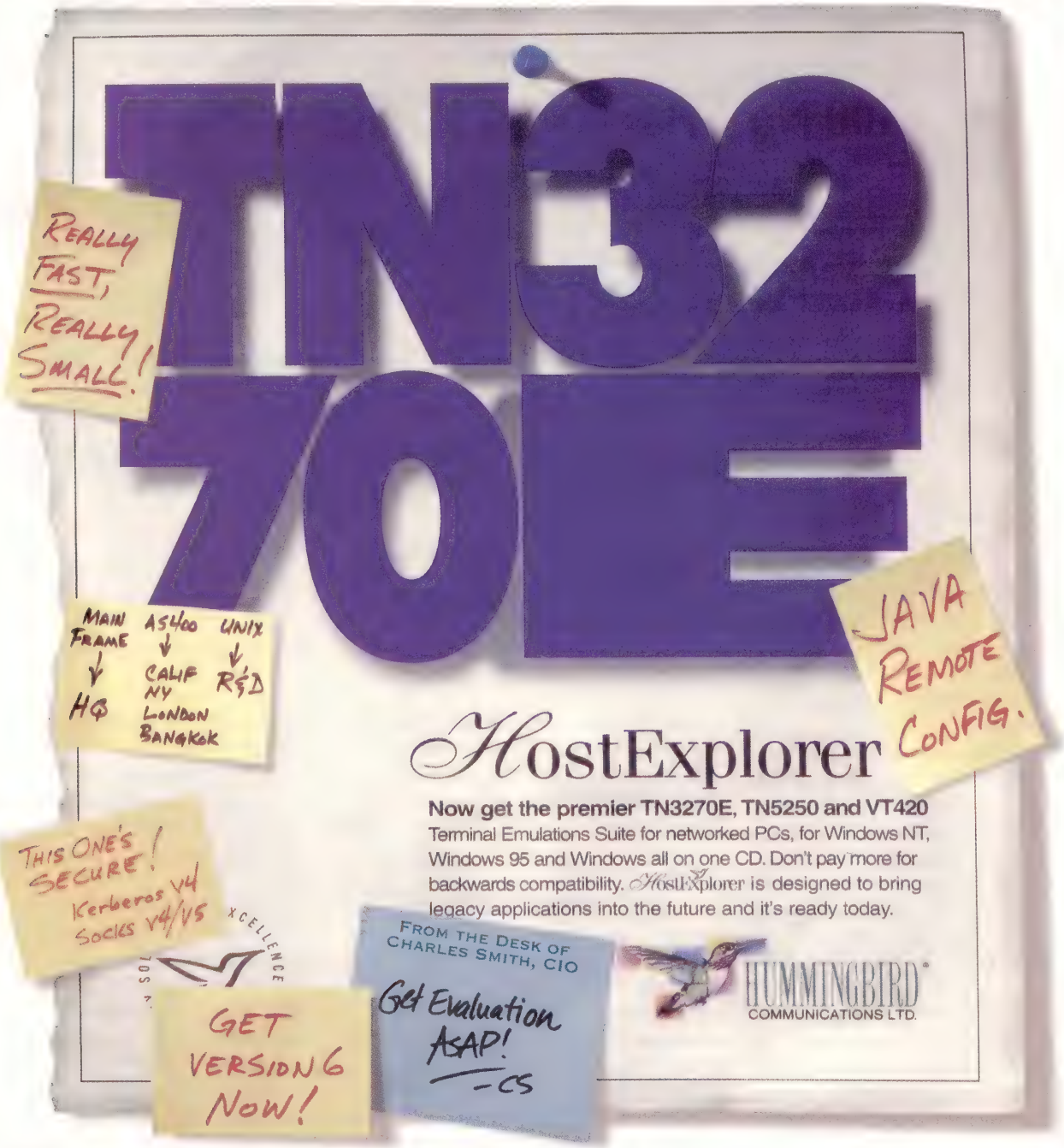
HP Pro: And scalability?

N.E.: Scalability, in many cases, is determined by the OS. When we launched HP-UX 11.0, we did it as 64-bit. But in fact, we rewrote it to be engineered for EPIC. And the reason we could do that is because we've known what's in the specification since 1993-94. So, HP-UX 11 already has the EPIC-based specification embedded in it.

HP Pro: Can you give an example?

N.E.: Oracle is moving a lot of their [Oracle] code to Java-enabled components. When you are going to use Oracle apps or the database

To an IT manager, this is a pin-up.



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you're going to go via Java Virtual Machines [JVM]. Because there are more registers to play with (in the EPIC architecture), that JVM stack could be up to 10 times smaller. So, you can have a chip-based JVM. If you can get a 10 times smaller JVM, you have the potential for 10 times the scalability.

HP Pro: But Sun isn't going with their SPARC version of Solaris [to the IA-64]. Right?

N.E.: In Sun's case, they said that there will be one version for IA-64 and it's the little endian version. And they are pretending that everything's OK.

HP Pro: But it's not OK?

N.E.: It's not OK, because Solaris on IA-64 is little endian, which means that the installed base [of Sun users] can't move their applications or their data. So, if you have 50 SPARC machines, you got all of these programs and say 3TB or 4TB of data all stored in big endian. Because the source code between big endian Solaris [for SPARC] and little endian Solaris [for IA-64] is incompatible, you've got to recompile every one of your programs or get a new binary from Oracle or SAP for everyone of your programs to move. That's not a trivial task.

HP Pro: And with UNIX to IA-64?

N.E.: Merced is bi-endian. So, RISC-to-IA-64 applications are going from big endian to big endian, so our [HP-UX] users don't have to change their data. Although Sun can take Solaris to IA-64, they can't take their installed base.

HP Pro: What if they port the SPARC version, which is big endian?

N.E.: If you're Oracle, now you have two binaries — one for SPARC and one for IA-64. Or little and big versions. Now, look at their [Oracle's] user base — it's all big. Okay, [let's suppose] I'm going to drop my little endian software development activities and switch to big endian. Sun slimes SGI, NCR and Fujitsu who they've signed contracts with to take Solaris to IA-64. Which do you think Scott McNealy is going to do?

When people talk about UNIX versus NT they got it wrong. NT isn't going to gobble up UNIX. It's really MVS versus UNIX — that's where we are going — to take HP-UX and make it look like MVS. That's our goal. It's the second attack on the mainframe.

HP Pro: Looks like a lose-lose situation all around.

N.E.: Personally, I think Scott McNealy will go off and do something else. At which point, everyone will blame Scott. In about 18 months, you'll be reading that was Scott's view and now we can renegotiate. At the moment that Merced starts getting traction Sun will take big endian over. But the disadvantage is that they will have to start working on the compilers — that is, embedding the IA-64 logic into Solaris.

Sun is licensing Solaris as a product to get profit — SunSoft, which has a P&L. HP-UX is part of the hardware division. So we're licensing HP-UX to NEC, Hitachi and Stratus and what we get back is technology around scalability, high availability — and not money.

HP Pro: What's your take on Compaq's strategy?

N.E.: I believe Compaq's mission in life is to dominate the enterprise with NT. I don't buy the fact that they are gong to do it with UNIX.

HP Pro: Why is that?

N.E.: They bought a struggling UNIX company called Digital Equipment with a 2.7 percent share of the UNIX marketplace. They are pumping money into Digital Bravo, the IA-64 version of Digital UNIX. And they have cross-licensed to Sequent. They will have a technically good UNIX on IA-64 to rival HP-UX. The issue for Compaq is that they haven't got ISV support.

HP Pro: So, the trick for Compaq is to get ISV availability?

N.E.: The trick for all of this is to get ISV software availability. They are breathing life into Alpha, even to the point of selling Alpha-based NT servers. But it's going to take more than that to bring the UNIX business back to life. They are ripping out of

Digital, the support services, consulting services, the NT expertise — which is very good — and making a lot of nice noise to the VMS installed base. They finally got a good strategy, similar to ours.

But, they are going to have to grow it faster than HP, which now stands about eight times greater in market share. So, that means that they are suffering in terms of software availability. Now why are ISVs going to produce the first version of their code for Digital Bravo rather than HP-UX?

HP Pro: What about NT?

N.E.: The NT business is very good. Digital was doing that very well. Compaq being Intel's biggest [customer] will clearly go to IA-64. Alpha is a hedge strategy until that appears. But the NT side [for Merced] is different. Because there is only one binary — then everyone has it.

Then your differentiation other than in your supply chain like Dell, comes down to the same sort of things — system design and first one to market. UNIX will be the big differentiation for IA-64. There will be some on NT, but not as much.

HP Pro: What's HP doing for NT?

N.E.: We're trying to pull NT up [into the enterprise], with R&D investment, better high availability and, where there is an opportunity, to bridge the gap between [NT] Wolfpack clustering and UNIX.

HP Pro: Final thoughts on the future of NT?

N.E.: Fighting NT is like standing on the chair in the sand and shouting at the tide not to come in. It's tiring. You make a lot of noise and eventually you lose.

HP Pro: What's HP's strategy at the end of the day?

N.E.: When people talk about UNIX versus NT they got it wrong. NT isn't going to gobble up UNIX. It's really MVS versus UNIX — that's where we are going — to take HP-UX and make it look like MVS. That's our goal. It's the second attack on the mainframe. The first was our surround strategy. But [the mainframe market] is still $40 billion. It didn't die. First we put the wagons in a circle. Now, were picking them off with rifle shots.

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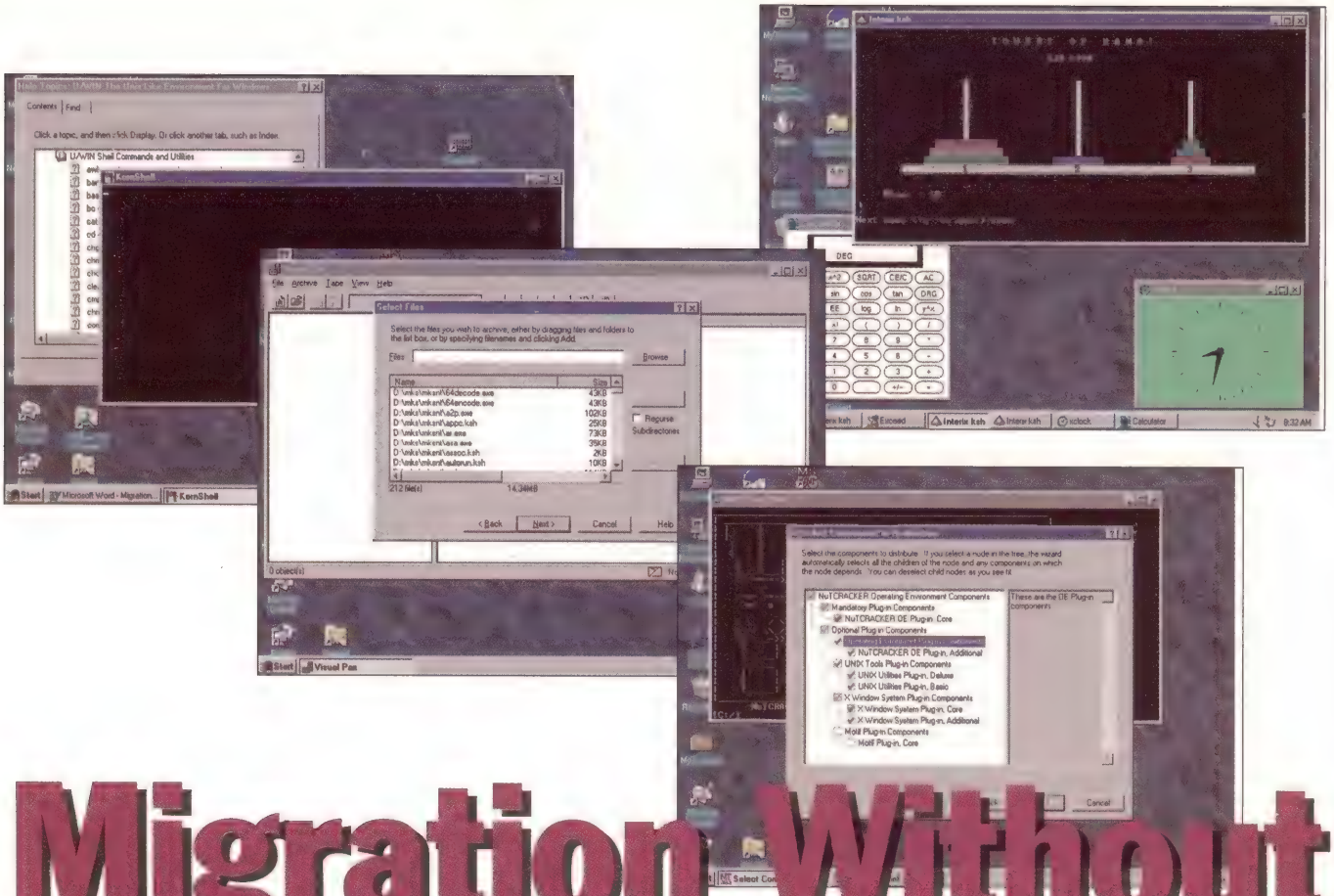

Migration Without Migraines

UNIX-to-NT Migration Tools

Organizations that once relied on a single UNIX hardware and operating system are all but gone in today's multiplatform world. That new reality has increased demand for software porting tools which have become important for UNIX shops moving their software to Windows NT in a timely and cost effective fashion.

Ryan Maley

Moving an application to another operating system is not always a simple task and often, herculean efforts are required to move existing software to new, unfamiliar systems. Completely rewriting software requires a significant investment in programming staff and takes quite some time. It may also require the training of existing staff to understand the new platform or the hiring of new personnel who understand the new platform, but have no experience with the application. Either option usually means sacrificing some performance or functionality, at least in

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the initial rewrite.

Application Complications

Another complication may be the need to maintain the applications on a separate operating system rather than simply moving from one to the other. If you need to deploy your application on multiple systems, you can either maintain the code on one system, porting each new version to other systems, or you can maintain the code on both systems.

Each method has advantages and disadvantages. Maintaining the code on a single system and porting usually allows for the quick deployment onto new systems. However, versions for other platforms may not be released at the same time.

Maintaining code on both platforms simultaneously may allow for more rapid deployment, but requires two staffs of developers. In moving the application to another operating system, the goal is usually to have the software perform as identically as possible on both platforms. Having separate development staffs usually means that the products will diverge.

So, we gathered several porting tools — from DataFocus, Global Technologies, MKS, and Softway Systems — to review. All were designed to help UNIX developers move their applications to NT with added features that help leverage a UNIX developer's skills. All the tools were tested using NT Workstation 4.0 with Service Pack 3 installed running on a desktop PC with an Intel 200MHz Pentium CPU, 128MB of RAM and 4GB hard disk space.

The software was tested by converting several small GNU applica-

INTERIX (OpenNT) 2.2

Interix, formerly known as OpenNT, is a set of software packages designed to bring UNIX functionality to NT. *Interix Workstation* and *Interix Professional Software Development Kit (ProSDK)* were examined. The Workstation version includes a wide variety of features focusing on client utilities such as the Korn, Bourne and C Shells, telnet and ftp clients and scripting tools such as **awk**, **sed** and **perl**. Also included is a copy of Hummingbird Communications Exceed X Windows X11R6 display server. If you already own a display server, a version called Workstation Lite is available without Exceed.

The ProSDK features standard development tools and utilities such as the GNU C and C++ compilers, **make**, **yacc** and **lex**. Also included are libraries to develop applications with X11R5, OSF/Motif 1.2.4, OpenGL and ODBC. The documentation lists over 300 commands.

Installation of the packages was straightforward. Each was installed separately and the installation programs require you to log out and log back in before using the software. For some reason, I couldn't log in after installing the ProSDK and had to shutdown and restart. Everything functioned properly after the shutdown. The Workstation installation used 90MB of disk space, the ProSDK used 186MB. Hummingbird Exceed used 65MB, bringing the total to 341MB. N.B.: Disk usage is for Intel code. An Alpha CPU version is available.

All the standard GNU libraries are available. Also provided are curses, termcap and standard lex and yacc libraries. The make is based on BSD make 4.4 and works as expected. Compilations are quick. The executable programs created run comparably to Linux running on a similar Intel CPU. Debugging is provided by the GNU debugger gdb. It works well, supporting just about everything you need such as breakpoints, stepping, listing and backtracing. Complete documentation is provided in Adobe Acrobat PDF files instead of Windows help files.

The Interix subsystem is a POSIX 1 subsystem running on NT. Consequently, porting code to run in this subsystem usually means making the code more portable by implementing POSIX features. The problem with this methodology is that most applications are not really POSIX compliant. If the applications run in NT's POSIX subsystem, they run in a separate virtual machine and may be hard to truly integrate with Win32 applications. On the other hand, making the effort to make code POSIX-compliant may allow it to be moved to other POSIX-compliant versions of UNIX, like HP-UX, more easily.

Interix supports NT 3.51 or NT 4.0 with Service Pack 3, the recommended platform. Interix 2.2: Interix Workstation (including Hummingbird Exceed) $579; Interix Workstation Lite (without Exceed) $299; Interix Software Development Kit: $299; Professional Software Development Kit: $1,999.

Editor's Note: Softway Systems, Inc. has announced that Interix is the first product to achieve UNIX branding on Windows NT. The certification by The Open Group, owners of the UNIX trademark, means that Interix 2.2 is a fully compliant UNIX product. For more information go to www.opengroup.org.

Softway Systems, Inc.
Suite 5514, 185 Berry Street
San Francisco, CA 94107
800-438-8649 www.interix.com

MKS TOOLKIT 6.1

Mortice Kern Systems (MKS) was one of the first companies to provide tools to move software to the DOS operating system and has a line of development tools that includes a well regarded configuration management product called Source Integrity. Their product to help port UNIX code to Windows platforms is called *MKS Toolkit*.

Installation of the complete Toolkit requires about 105MB. A reboot is required to complete the installation. The documentation specifies 210 command line and GUI utilities. It provides a Korn shell, but no Bourne or C shells. Standard UNIX tools such as **vi**, **awk** and **grep** are available. Neither **lex** nor **yacc** is built into Toolkit, possibly because MKS offers these together in a separate product. Perl is available.

Toolkit does not come with its own C compiler. You can use Microsoft, Watcom or Borland C++ compilers. The installation program then creates a **cc** command to provide a link to the appropriate compiler and to be used by *make*. This allows you to continue to work in your favorite C development environment while taking advantage of MKS Toolkit. There appears to be no support for porting X Windows applications or for the curses library.

In addition to the command line utilities that UNIX developers know and love, Toolkit provides several graphical utilities that perform and consolidate multiple functions. For instance, there are versions of **diff** and **vi** for Windows. This has some advantages. In a command line window, **vi** is limited to 25 lines. The GUI version is only limited by the resolution of your display. Another powerful utility is Visual Pax, which allows you to graphically create and use the various UNIX compression and archive utilities such as **cpio**, **tar** and **ustar**.

One great utility in Toolkit is **su**, which allows you to run a process as a different user, letting you act with another users profile, including permissions and defaults. This is a great tool for developers whose accounts typically have much different security profiles than the average user.

MKS Toolkit runs under Windows NT 3.51 or 4.0, on both Intel and Alpha CPUs. A Windows 95/98 version is also available.

MKS Toolkit 6.1: $399; MKS Lex & Yacc: $399.

Mortice Kern Systems, Inc.
185 Columbia Street West
Waterloo, ONT., Can. NL2 5Z5
800-265-2797 www.mks.com

U/WIN 1.5.4

Global Technologies' *U/Win* is a relatively new player in the porting tools market. Not only are they providing tools for UNIX - to-NT, but for various UNIX-to-UNIX environments. Global works on providing what they refer to as a "Common Operating Environment." This means examining what each platform lacks in the functionality developers need and providing the missing functionality in that platform's version of U/Win.

Installation of the base environment requires 123MB and the SDK requires 62MB. The installation program recommends an NTFS file system, the only package reviewed that recommended a specific file system. The software seemed to install fine, but a script to set protections on the various files generated quite a few errors. After performing the recommended reboot, the Korn shell would not start. Applying an update patch sent by Global Technologies and rebooting the system seemed to cure the problem.

The U/Win SDK package provides all the important libraries necessary to create a wide variety of applications, including curses and X11R6.3 X Windows libraries. The package includes GNU C and C++ compilers, but the installation program does not automatically configure them to be run. Instead the release notes give a pointer to configuration instructions. The SDK features a solid debugging application and several other useful applications such as GNU flex.

U/Win also offers versions for Win 95, Win 98, FreeBSD, AIX, Linux, HP-UX, Solaris and SunOS. This may offer some advantages to developers not just moving from UNIX to NT, but looking to deploy their software across multiple platforms.

U/Win version 1.5.4 for NT Workstation: $249; SDK: $249.

Global Technologies Ltd., Inc.
Suite 600, 2000 Academy Drive
Mount Laurel, NJ 08054
609-722-0906 www.gtlinc.com

tions, such as *less* and *sendmail*, and a 6,000-line custom software package which maintained a small database file. All the packages performed the basic functions of compiling, linking and providing helpful error messages.

Recommendations

U/Win is very good, but bears the marks of a slightly immature application. It appears to need polishing to bring it in line with the other packages. With the wide variety of platforms that it supports, U/Win may be the very package for porting your software to multiple configurations.

While MKS Toolkit will do a good job moving applications from UNIX to Windows, it appears to be a one way trip. Once the application code has been changed, you will probably lose the command code base that is the real goal of cross-platform developers. Toolkit is probably best used to help UNIX developers make the move to NT, providing the familiar tools that UNIX developers have come to rely on and providing graphical versions that they can begin to use.

OpenNT and Nutcracker are very close in their functionality. The big differences derive from their basic approach to creating applications. OpenNT uses the POSIX model and Nutcracker uses the Win32 model. Either is a good choice to move your applications, however creating applications that have a common code base between UNIX and NT will be easier with OpenNT.

Creating applications that communicate well with other Windows applications will be easier with Nutcracker. Even this is tempered by OpenNT's support for ODBC, one of the mainstays of Windows programming.

Porting tools are not necessarily the answer to every problem, but they certainly can help speed the process of moving your applications to NT. The fact that all of the packages worked well makes a solid recommendation somewhat difficult. But the good news is that you have several qualified choices depending on the goals for your code migration and the preferences of your developers.

Ryan Maley is a Microsoft Certified Systems Engineer and the information systems manager for a Midwestern manufacturing company. He can be reached at ryan@maley.org.

NUTCRACKER 4.0

DataFocus' *Nutcracker X/SDK* is also designed to be a complete tool to port UNIX applications. Nutcracker has some interesting features. It includes the MKS Toolkit's Korn shell and graphical utilities. It includes SCO's Xvision X Windows display server, but can be configured to work with other servers such as Digital Equipment's eXcursion, WRQ's Reflection/X and Hummingbird's Exceed. Support libraries for both Wintif and Motif are included. There is an SDK version that does not include support for X Windows applications.

Installation of Nutcracker X/SDK, including sample code, requires 91MB and a reboot of your system. A Resource Kit containing another 12MB of sample code was installed. Installation requires the Microsoft C++ compiler. The program interface with Microsoft C works well and transparently. Debugging is done with the Microsoft debugger, either in the integrated development environment or from the command line.

Nutcracker X/SDK contains an Application Packaging Wizard to help distribute the applications you create. The Wizard packages the DLLs required for your application to work correctly on another Windows system. The components are called plug-ins in the Wizard. For instance, you can select to include X Windows and Motif components to include in the distribution. An X display server can be licensed from DataFocus to include with your distribution, but no server is provided by default. Careful programming is necessary to insure that the application is flexible enough to function with many display servers.

Nutcracker runs under Windows NT 4.0. The program can generate code for use on Windows 95/98. A special section in the porting guide describes how to prepare your applications for 95/98.

Nutcracker version 4.0 X/SDK: $3,495; Client Plug-in: $98; Server Plug-in: $695; Plug-in option X display agent: $72; UNIX shell and utilities: $100.

Editor's note: Nutcracker 4.1, not available for this review, is now shipping. It includes support for Microsoft's Terminal Server and Services for UNIX, a telnet server, support for Visual C++ 6.0 and support for additional X Servers.

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Help For The HP-UX 9.04-Lorn

I'm running HP-UX 9.04. Is it true that HP-UX 9.04 will not be made Year 2000 compliant?
HP's Support Life Policy for HP-UX provides full support for the current release and last major release. In accordance with this policy, **HP-UX 9.04 will not be Year 2000 compliant.**

Will 9.04 still be supported in the future?
Because HP-UX 9.04 was discontinued, it will no longer be supported as of November 1998.

Was 9.04 at least tested for Year 2000 compliance?
No, version 9.04 was not tested. HP-UX 9.04 software products were not tested either. Therefore, an exhaustive list of HP-UX 9.04 libraries, commands or associated software products affected by Year 2000 can not be provided.

Did HP test all its other OS versions and products?
HP tested all of its active and supported products to one of the most stringent Year 2000-compliance standards in the industry. HP remains committed to the goal of enabling its HP-UX customers to achieve their Year 2000 readiness objectives in a timely manner.

How do I make sure I have a Year 2000-compliant version of HP-UX?
Upgrading to a compliant version of HP-UX is the only way for customers using HP-UX 9.04 to ensure their HP 9000 servers will continue to operate properly in the Year 2000.

What are the recommended upgrade paths?
The recommended upgrade paths are to either HP-UX 10.20 or HP-UX 11.0.

Are there any alternative paths?
Customers may also upgrade to HP-UX 10.10 or 10.01, which are also Year 2000 compliant. However, these earlier HP-UX releases do not provide all of the advantages of large file system support or 64-bit features introduced in the later HP-UX releases.

YEAR 2000
SPECIAL REPORT

Will I need OS patches?
Yes. All HP-UX 10.x and 11.0 releases require customers to install patches to be compliant.

How do I get to HP-UX 10.20?
A comprehensive upgrade program was made available to all HP customers in September 1998. Please refer to www.hp.com/go/year2000.

What if I need more help than that?
There is a three-day *HP Year 2000 Planning and Methodology Course* ($4,800). The course covers planning and implementation of Year 2000 procedures based on Data Dimensions' Ardes 2K automation tool, in addition to material pertinent to the HP 9000, HP 3000, HP NetServers and HP Openview. Course fee includes a free license to use Ardes 2K.

Anything for HP-UX 11.0 users?
There is a *Hands On with HP-UX 11.0 Workshop* ($450 per single-user license).

Editor's Note: At least there's no shortage of information about the Year 2000, likely the most anticipated, yet already dreaded year in human history. Every aspect of the Year 2000, the Millennium Bug, the Y2K Bug, or whatever you like to call it has been reported, explored or investigated.

There are books by the hundreds, daily newspaper stories, thousands of industry trade magazine articles and of course, an infinite variety of Web sites. In case you missed some of it, we offer a short summary:

Books

Solving the Year 2000 Crisis by Patrick McDermott (1998, Artech House, Inc.)

The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences by Capers Jones (1998, Addison-Wesley)

HP Y2K Web Sites

HP Year 2000 Program
www.hp.com/year2000/info.html
HP Y2K FAQs
www.hp.com/year2000/y2kfaq.html
HP Computer Product Status
www.hp.com/year2000/products.html
HP NetServer Y2K Status
www.hp.com/netserver/newsrm/y2k.htm
HP Information Storage Group Y2K Status
www.hp.com/isgsupport/cms/year2000.html

General Y2K Sites

Y2K For Women Only
www.y2kwomen.com
Microsoft Year 2000 Resource Center
www.microsoft.com/technet/topics/year2k/default.htm

Year 2000 Information Center
www.year2000.com
President's Council On Year 2000 Conversion
www.y2k.gov

HP-UX 9.04-WARNED IS FOREARMED

The currently known HP-UX 9.04 Year 2000 issues fall into several basic categories:

The program generates three-digit years. This is a common problem caused by calculating a year as the number of years since 1900. This method worked correctly for twentieth century dates, but after the year 2000 this method results in a three-digit number. For example, the year 2020 would be displayed as 120.

The program does not perform year comparisons correctly. Often, functionality is based on a comparison of two dates. For example, copying a file only if it is newer than the existing file. When a two-digit year in the twenty-first century is compared to a two-digit year in the twentieth century, the twentieth century year is considered the most current since its two-digit value is larger.

The program displays years incorrectly but functions correctly. This category is the least harmful since the program exhibits normal behavior beyond the year 2000. The only danger lies in how the program's output is used. For example, if the program outputs years with two digits, a custom script may not correctly interpret the two-digit year and misbehave.

The program only uses two-digit years, creating behavior problems. Some programs' functionality depend upon data that contains years that are only stored and/or represented with two digits. This can create a number of problems including formatting and sorting data. For example, when sorting mail messages by date, messages with a twenty-first century time stamp will appear older than messages from the twentieth century.

The program will not accept dates from the twenty-first century as input. The program either rejects such input or accepts it but then converts the date back to the twentieth century. For example, if you are prompted for a year and you enter 2020, your input may either be rejected or accepted as 1920.

The program restricts the number of years since 1900 to 99. Many programs internally calculate years as the number of years since 1900. For example, the year 2020 is 120 years after the year 1900. Some programs restrict this value to 99, in effect restricting the maximum year supported to 1999 and disallowing twenty-first century dates.

The program has years hard-coded as 19xy. The century portion of a year will always be displayed as 19. For example, the year may be 2020 but it is displayed as 1920.

The information about the Year 2000 status of HP-UX 9.04 is provided "as is" without warranties of any kind. Because much remains unknown about other potential Year 2000 issues with HP-UX 9.04, the only way for HP-UX 9.04 customers to ensure that systems will continue to operate properly in the Year 2000 is to upgrade to a Y2K-compliant version of the HP-UX operating system.

Fred Mallett
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Ignite/UX ... The Series

Writing is a bewildering hobby. A few months ago I wrote about Ignite/UX because I couldn't come up with a better subject. It was a "best idea" at the time. But, it turns out that more people replied with requests for additional information on that subject than any other in the history of the column. Go figure.

Well, give the people what they want, so this column begins a series on using Ignite/UX. If you missed it, the introduction and overview was in my August 1998 column. I suggest reading it again before digging in this month.

Most of my e-mail was from people who had a hard time getting automatic installations to work properly. That takes the guesswork out of what to cover this month. We'll assume that we want to make automatic, hands-off Ignite/UX software installations over the network from a "Golden Image" file. In the next few columns we'll talk about how to accomplish this, plus throw in some extra details for further customization and larger scale applications of the task.

Let's start with a list of the steps required to setup hands-off installations.

1) Install Ignite/UX on what will be the Ignite Server.
2) Configure the Ignite Server.
3) Install any Boot Helpers (if needed).
4) Make the "Golden Image" host.
5) Create the Archive file from the Golden Image.
6) Create/edit your Ignite configuration files.
7) Setup for Ignite clients.
8) Ignite clients as needed.

INSTALLATION IGNITION

As mentioned in the first column get the latest version of Ignite/UX from **www.software.hp.com.** Be sure to choose the right one, as it is available for different versions of HP-UX and hardware types. Once you ftp the tar file down, do a **chmod 644 <ignite-tar-file>** to the tar file, and set the owner as **root.** If your Ignite server currently has Net-Install loaded on it, you must remove it before installing Ignite. This is most easily done by creating a file with a really long name before the install of Ignite: **touch /tmp/okay_to_remove_net_install.** This will allow the **swinstall** to automatically remove Net-Install. You can use a command such as **swinstall -s <ignite-tar-file> *** to start the installation.

The **swinstall** installation makes changes to the following files: **/etc/PATH, /etc/MANPATH /etc/inetd.conf** and **/etc/exports.** The **inetd** file was edited to allow **tftpd** access to **/opt/ignite** and **/var/opt/ignite.** The **exports** file should have been edited to contain **/var/opt/ignition/clients -anon=2.** You might want to check the **exports** file as I've seen the edit process fail before. Also, the command **exportfs -a** should have been invoked to actually get the **clients** directory exported. Check on it and re-invoke the **exportfs -a** command if needed.

Once installed, invoke the **/opt/ignite/bin/ignite** program. (Ignore the error message about there being no clients yet.) This GUI is based on the Microsoft look and feel (Yech) of "tab" divided sections. Eventually you will use the Options/Server-Config tab to set items such as adding a pool of IP addresses for use during installs, default configuration name and where to run the GUI. I say eventually, because most of these things will be decided later in the setup process, though the documentation seems to think you will know the answers now.

It is a good idea to browse around the GUI a bit. In real life, you're not forced to use the GUI, but it can be occasionally helpful.

TWO THINGS

Two things that should be set immediately. One falls under the Options/Session-options tab. Make sure you enable "confirm new clients," or some cluster client might inadvertently boot from the Ignite server and get software loaded on it. This can really ruin someone's day. The other is to point the Ignite server at a software Depot.

Another way to do the initial Ignite server configuration is to run the script **/opt/ignite/bin/setup_server.** You might want to skip adding many DHCP address entries until you read a later column when we'll talk about the pros and cons of doing so (add one address for use to build the Golden Image host).

At this point, make a note of the **/opt/ignite/share/doc** directory — there are several guides and manuals in there that are rather helpful. The man pages are in **/opt/ignite/share/man.** If

you are using CDE, just logout and upon login your **MANPATH** variable will be set correctly to find them.

COOKING WITH CLIENT HELPER

Clients locate the Ignite server via broadcasts. If your Ignite server is behind a router/gateway such that a broadcast cannot reach it, you need to install a Boot Helper server. This is a host that is setup to listen for Ignite boot request broadcasts and responds with a packet telling the client where the Ignite server really is and which gateway to use to get to it.

They're simple to setup, just install the **Ignite/UX.MinimumRuntime** fileset and perform a couple configuration steps, such as assigning the IP address of the Ignite server. You'll need to set up a Boot Helper in every subnet that has Ignite clients where a broadcast does not reach the Ignite server. The configuration of Ignite Servers and Boot Helpers is addressed in detail in HP's book "Ignite/UX Startup Guide for System Administrators," which is included with Ignite/UX and found in the **/opt/ignite/share/doc** directory.

The Ignite server (assuming you added at least one DHCP test IP address) is now open for business — at least for manual installations. Now, use it to create a Golden Image. We do this in our education classes for practice, but actually the Golden Image host could be created with normal **swinstall** software installation also.

The Golden Image host is to be a clean OS installation, with everything you want configured or installed setup on it. Think of it as the master copy of the installation you want on all your Ignite clients. Remember that there might be more than one Golden Image for different machine types, configurations, or application sets.

The goal is to create a fully installed and configured machine on similar hardware and disk configuration to those that you will be installing with Ignite. Of course, this will wipeout the disks on that machine, so be sure that it is a willing volunteer.

To use Ignite to create this image host, power on the image host to the **boot_admin** prompt, then use **search lan install** and boot from the Ignite server. Another more fun way is to check out the remote install capability of Ignite.

Login to the Ignite server as root and make sure the target image host is powered up. You can now run the **bootsys -w -f <image-host>** command. This copies a new kernel to the image host, then has it reboot on that kernel, causing an Ignite session to be run. The GUI will appear on the Ignite server. You can now use the four tabs of **Basic, Software, System** and **fileSystem** to configure, then install the host.

Next, be sure that all applications you want in this image are loaded and configured. Also perform any configurations that you want on all recipients of this Golden Image.

Next time we'll create the actual Image file, essentially a tar of the entire system, minus any host specific files.

—Fred is currently trying to sell his idea for IGNITE...The Series to Hollywood.

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Rebirth of the Timeshare Industry

To enliven the industry's boring stability, there's a rapidly emerging trend that has the potential of changing how computing power and applications are delivered to business customers, as well as the terms of competition in virtually every segment of the computing and telecommunications industries. That trend is Internet Applications and Business Solutions Hosting (IAH).

With IAH, business applications are hosted remotely by a new-generation Internet Business Solutions Provider (IBSP), rather than run locally by the business user. This trend has the potential of leading to a new computing model that we call the Internet Applications and Business Solutions Hosting model where computing power and application functionality are delivered to customers over the Web on an as-needed basis.

BACK TO THE FUTURE

The emergence of IAH could well result in the return to a new, much more flexible form of timesharing — where companies source complex computing infrastructures to a service bureau (in this case, an IBSP) and the business customer is freed to focus on their own core business.

The implications of this development are phenomenal. Consider, for example, some of the outstanding questions within the context of three broad constituencies: 1) business customers; 2) ISPs; and 3) computing industry vendors.

Business customers are being whipsawed by confusion. On one hand, they recognize the incredible value of computers and computing — from their role in reducing costs, to that of creating new business opportunities and allowing businesses to change the rules of competition in their favor.

In contrast, computers are almost becoming more trouble than they are worth. Companies have to upgrade software every six to 12 months, upgrade computers every 18 to 36 months, retrain people continually and worst of all, redefine entire computing models every five years — from host-based, to client-based, to client-server, to network computing and all the permutations of these various models.

As if this weren't bad enough, every new computing model and in some cases, every new platform requires different skills scarcely available in the market, much less in each individual company. And consider the plight of small businesses, which can't afford a single MIS person, much less the latest technologies and skills. What if all of these problems could be solved at once, by offloading all of these infrastructure issues to a specialist who assumes all of the headaches and charges for just the resources utilized?

Large corporations understand the value this kind of service would bring, but many have already built their own infrastructures. Small businesses could certainly benefit from this form of outsourcing, but will require extensive education and handholding. Which applications will each class of customer want hosted and how much will they pay? How much customization will companies require? What is the need for specific, vertically focused services? And what about the security of critical business data?

A GREAT ESCAPE?

Next, look at ISPs — the huge, ill-defined agglomeration of local, regional and national access providers, global content providers (like America Online and Microsoft Network), telcos, CATVs, utility companies and innumerable other types of companies that are entering the business. This industry — which is made up of 4,500-plus companies — is in trouble, with too many sources of low value-add, low-margin services and too few opportunities for differentiation.

These companies are crying out for opportunities to escape the crushing commoditization entailed in providing raw access services, and are gradually moving up the hosting hierarchy — progressing from hosting access, to content, to e-commerce sites, to personalization services. A few are even moving higher, hosting e-mail, basic collaboration capabilities and Virtual Private Networks (VPNs).

What if these ISPs could move to a new level — hosting true business applications like accounting, sales force automation, customer call center, inventory planning or even ERP and specialized vertical applications? Sound far-fetched? Not to application vendors like SAP, JD Edwards and Siebel, or leading edge ISPs like IBM Global Networks, Digex, GTE, 9 Net Avenue and Data Return, which are already experimenting with application

hosting. And certainly not to vendors like IBM, Sun Microsystems, Microsoft, Compaq Computer, Oracle and Netscape, which are focusing on IAH.

ISPs may find that progressing from access hosting, through content and application hosting to becoming a comprehensive IBSP for subscribers, may seem like Nirvana. It furnishes an opportunity to provide high levels of value-add and to become a trusted business partner to their subscribers. It also offers innumerable opportunities for differentiation, with one ISP focusing on SAP applications, one on sales force automation and another on medical applications.

However, when you dig deeper, this progression is fraught with risks. After all, what does an ISP know about ERP applications? How much customization do individual customers require? How can ISPs fund the costs of entry on the basis of current access margins? How can they market these specialized services? Are VARs and systems integrators better suited to providing these services than are ISPs? And what competition will ISPs face from companies that want to provide hosting for their own business partners, suppliers, resellers and customers?

CRISIS IN VENDORVILLE

Meanwhile, many business software vendors are facing a crisis. The market is rapidly maturing and small and midsize businesses have been slow to recognize and buy into the value proposition of server-based applications. Database and ERP growth rates are slowing and even mighty Microsoft insists that desktop growth rates will lose speed.

On the hardware side, UNIX systems growth is slowing in the face of the explosive growth of NT and the sustained demand for mainframes. UNIX vendors, however, maintain a virtual stranglehold on the booming telecom and ISP markets. Given the critical importance of these two markets and the new opportunities created by IAH it's no wonder that the most forward-thinking hardware vendors, as well as systems and application software vendors, are now designating these markets as strategic priorities.

But IAH raises even more questions for these vendors than it does for customers or ISPs. For example, over what timeframes will small, midsize and large businesses adopt this model and how large will each segment be? What applications will be most important for each segment and how will one application build on top of the other? Will IAH stimulate or cannibalize the traditional on-site hosting market? How should ISVs change their licensing models to accommodate this type of outsourcing? How will ISVs determine which ISPs will be best suited to host these applications and what role will traditional channels play? Should vendors host their own services or leave the entire market to partners? Will ISPs and telcos continue their romance with UNIX, or migrate to NT as their services expand from access to include applications?

Sure, Internet Applications Hosting may turn out to be just another flash in the pan of hype — like artificial intelligence, object-oriented computing and network computers — that regularly zaps the computer industry. But it also has the potential of creating totally new markets, obsoleting existing markets and completely changing the rules of competition in virtually every segment of the computing and communications industries. Given the huge potential rewards of winning and the possibly deadly consequences of missing such a critical new wave, nobody can afford to sit out.

—Thomas Kucharvy is president of Summit Strategies, a Boston Mass.-based marketing and channel strategy consulting firm.
Originally published in the August 1998 "View From The Summit."

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SAN-itize Your Network

Meeting The Challenges Of The Data Age

Larry Kallhof

The amount of storage capacity shipped this year has doubled over that of last year. And a significant portion (perhaps all) of network-stored data is considered mission-critical. In this environment, just deploying more and faster storage devices is not enough.

One approach, network-attached storage (NAS), uses an integrated storage system that communicates with network protocols like TCP/IP. A network device is connected to the storage system and functions as a server. The device processes file I/O protocols such as NFS, thereby managing data transfers between itself and clients. The drawback? The protocols limit performance.

Storage-area networks (SANs) meet the challenge in a different way, with better performance results. A SAN is a high-speed "subnet" that establishes a direct connection between heterogeneous storage resources and servers. SAN network processors handle data channels and network protocols and provide a focused set of services for high-performance, reliable shared storage access. They uniquely exploit data channel functionality and performance; they do not function as servers. Think of a SAN as an extended and shared storage bus.

DATA MIGRATION MATTERS

With the SAN architecture, data becomes more accessible to users anywhere on the network and different kinds of storage resources can be shared between different applications and servers. For example, a large bank that recently acquired a smaller bank selected a SAN solution to act as the traffic cop and feed continuous live transaction data from 1,200 branches in 15 states to headquarters.

The system also solved a major data transfer problem for the bank, which added more than 500 branches in six states as part of the merger. Instead of flying tapes from the new branches to headquarters to transfer customer data, it set up a gateway at the acquired bank's site and fed data electronically into a corresponding gateway connected to 2.5TB of DASD. This kept the data online and accessible, while eliminating a manual task that could have been very costly.

In moving data from one storage system or data center to another, an IT organization confronts three issues: the available time window; the effect of moving data on online resources; and the reliability of the data after the move. SANs can also use high-speed connections and software products to accomplish this such as SRDF from EMC, XRC from IBM, H-XRC and Online Data Mover from Hitachi Data Systems and TDMF from Amdahl.

Other applications that can benefit significantly from SANs include:

Backup and Restore. The sophistication of back-up systems and procedures is driven by the amount of data involved, the available time window and the restore requirements of the business (e.g., when the data is needed to continue operations). SANs provide new levels of performance and flexibility in backup and restore, making it possible, for example, to backup data from different servers to the same automated tape library. High performance is key to reducing recovery times and SANs make better use of available bandwidth.

Archiving and Retrieval. Archiving data to less expensive, less immediately accessible storage is typically a function

of the age of the data and the relative need to access it. Archival applications include storing check images and point-in-time records such as customer billing statements. Usually, archive networks are configured either within a company's multiple locations or in conjunction with a business recovery vendor such as IBM, Comdisco, or SunGard. SAN solutions support effective and efficient archiving from different kinds of servers to the same storage system. A SAN can provide both local- and wide-area connections and necessary gateway and conversion functions.

Disk Mirroring. Daily backups are often not enough, particularly when the effects of losing data between backups is substantial or when nonstop data access is required. That's when disk mirroring — the creation of multiple disk images at the same time — is desirable. With SANs, organizations can perform database mirroring over unlimited distances, synchronizing the data according to application requirements. The network provides high availability and fault tolerance, as well as high performance and manageability.

Shared Data. Beyond shared storage, the ultimate goal of information management is sharing data — the extraction, movement, or loading of data between environments. Think, for instance, of data collected using one platform but needed for an application running on another. There are multiple levels of data sharing today and SANs support them all: network transfer, typically involving TCP/IP; channel transfer, such as with ESCON; and controller-based shared-storage transfer. This last method can be very fast (disk to disk) and it allows the use of redundant disk resources. Storage controllers now permit one copy of data to be shared across SANs by heterogeneous computers.

NAS uses integrated storage systems communicating with network protocols. Think of a SAN as an extended and shared storage bus.

SANs enable organizations to use existing storage capacity more efficiently, including centralizing servers and storage resources that are now widely dispersed. The acquisition of new storage devices can also be done more efficiently, since the bytes of capacity in different storage systems are interchangeable. In addition, SANs enable organizations to use only one set of network management tools. IT managers don't have to undertake costly development efforts to replicate tools for different operating system environments, which is the usual situation today.

—Larry Kallhof is Director of Product Marketing at Computer Network Technology (CNT) Corp. in Minneapolis, Minn.

NO BUS TO CATCH

The SAN liberates the storage device; it's no longer on any one particular server bus, but attached directly to the network via a network processor device. In other words, storage is externalized and functionally distributed to the organization.

A SAN architecture makes all storage devices accessible to all servers. A SAN uses a wide range of local- and wide-area technologies, including Fibre Channel, Fibre Channel-Arbitrated Loop (FC-AL), ESCON, IBM's Serial Storage Architecture (SSA), DS-3, ATM and SONET. Whichever technologies are used, the objective is a high-performance subnet with fault tolerance and multiple paths. In effect, a SAN combines the high performance of an I/O channel with the connectivity of a network.

Implement a SAN as a separate subnet. The critical I/O traffic between server and storage should not be blocked or delayed by other kinds of traffic. But building separate physical networks is prohibitive. In fact, many organizations have spent recent years merging separate networks for IP/IPX and SNA traffic and channel extensions. The solution is to provide different classes of service on a shared physical network. Fibre Channel has this capability, as does ATM. And emerging technologies like IP v6 will further enhance this prioritizing capability.

Attach heterogeneous storage devices directly to a network. This requires a special kind of networking device, one that can handle the classes of service that are established and both channel and network protocols. These devices should also provide a fault-tolerant architecture, guaranteed data delivery and data integrity, load leveling for efficient bandwidth utilization, data compression and alternate path routing.

Security needs to be addressed differently. Because storage devices are not protected behind servers as they are in traditional architectures, third-party security, encryption and firewall technologies play a critical role. But each installation has to be examined and security has to be designed to fit the situation. In a SAN world, networking, storage, database, network management and systems management providers will need to cooperate more closely than they have in the past in order to provide complete security solutions.

—L.K.

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Fact And Frictions S-38
The HP 3000 has withstood the test of time. But 21st century computing will offer a new set of interoperability challenges.

Product Brief S-39
Nobix, Inc.'s JobPak 3000

Can't We All Just Get Along? S-40
Build the interoperability framework you'll need to keep peace in the factious world of MPE/iX, HP-UX and Windows NT.

Fact And Frictions

As we get ready to celebrate the 13th year of *HP Professional*, mark the 27th year of the HP 3000 and to anticipate the last year of the 20th century, it's a good time to look back as well as forward. What more can we say about the HP 3000? It's a system that has withstood the manic impulses of an industry moving faster than neurons in an amphetamine bath. It has defied the dire predictions of pundits and even outlived the calculations and expectations of HP's own executives and market experts.

If you read my interview with Lew Platt in September's issue (shame on you, if you didn't) then you know that he was surprised by the vitality in the HP 3000 market. However, Mr. Platt also had this to say: "The HP 3000 [market] is not growing anymore. The growth rate is negative."

A POSITIVE NEGATIVE

At first blush, that fact, in and of itself, might be a surprise to many in the HP 3000 market. Perhaps it's a shock. That's the bad news. The good news is that as Mr. Platt told me, "It's a very small negative number compared to what we thought it would be." Yes. That's right, HP 3000 business is still being booked. Well, it looks like another market death has been greatly exaggerated.

The HP 3000 (and MPE/iX of course) has two great advantages: HP's continuing investment, first in the form of PA-RISC architecture in 1987 and now in the form of IA-64, which is grounded in the HP/Intel-designed Explicitly Parallel Instruction Computing or EPIC architecture. But beware: while the 21st century version of the HP 3000 may still look and feel the same — that is your applications like HP COBOL, Image and Vplus will still run — 21st century computing itself may *not be the same*.

For example, interoperability will rule. That means, your HP 3000 systems will not have to just work, but work well, with UNIX, Novell and NT systems. As you are probably aware, NT interoperability, in particular, is an issue. That's why HP has invested time and money to make NT and UNIX interoperability easier.

So, to help prepare you, we provided some tips on using Samba/iX in our October issue and this month we're giving you the first installment of our interoperability insights by Dave Herbert, product marketing manager for Reflection NT/UNIX Integration. Next month, we'll give you part two, plus some FAQs about the HP 3000 and Y2K issues.

IN THE NICHE OF TIME

But as good as the HP 3000-MPE/iX combination is, it's the second advantage that has led to its recent re-birth. That is, the loyalty, imagination and vision of the HP 3000 users and vendors. Lew Platt knows it too. "It's not just loyalty." He knows that sound business and economic reasons are at work. And "that's what led to an increased investment in the HP 3000." Still, after twenty-six years, the HP 3000 is a mature technology. And mature technologies and their vendors must mine the niches to remain successful. That's why HP is focusing on these five: airline reservation systems; mailorder/catalog sales; credit unions; healthcare; and manufacturing.

In fact, as we were going to press, HP's CSY division announced that they were purchasing Open Skies, Inc. (Salt Lake City, Utah), developers of OpenRes, airline reservation software, for MPE/iX. We'll bring you more on that development next month; but for now the HP 3000 remains one of the longest running technology success stories. And its future looks bright.

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CLARIFICATIONS

The version of Samba/iX shipping with MPE/iX 6.0 is ***1.9.16P9***, not 1.9.18P.9 as we reported in October's *The Pizza Pay Off* sidebar in the *Doin' The Samba On The HP 3000* feature.

Also, the version being updated by Michael Gueterman and Joe Geiser for MPE/iX that will bring Samba/iX in line with Andrew Tridgell's Samba Team's current release is not yet available. Check their Web site, www.sambaix.com, for that information.

Product Briefs

Get A Job!

Nobix, Inc. is releasing version 6.1 of its JobPak 3000 suite comprised of the JobRescue job management and error detection program for batch processing environments, JobTime automated scheduler of batch processing activities and ElectroPage online report viewer and print distributor.

Version 6.1 includes: Year 2000 compliance; the use of MPE/iX ports and TCP sockets; saved spool files are now based on POSIX file system; file numbers are relative to the number of spoolfiles saved instead of a unique file ID; and documentation is on CD in PDF format.

DuPont's specialty chemicals division (Wilmington Del.) are long time users of JobPak 3000 in an environment of HP 3000 947s, 957s and 987s in support of applications that manage maintenance operations in 14 plants across the U.S. and Puerto Rico.

"Y2K compliance was the only reason we upgraded," says Melvyn Norona, a senior consulting associate at DuPont. Although forced to upgrade, Norona has found several enhancements much to his liking.

He especially likes the inclusion of 132-character support for viewing reports. "We don't have to keep flipping left and right to see the whole report anymore." And report displays are compressed to show only the actual number of printed lines instead of a mostly blank page.

His staff experienced several small issues with the upgrade as well. An application developed by one of his programmers that imbedded the line mode feature of JobRescue's previous release no longer worked because "line mode disappeared." Norona added, however, that Nobix technicians worked with his staff to fix the problem and he was very pleased with their support.

Previously, he could change the text file that defined options for report file retention using a text editor. Now, not a text file anymore, his staff had to learn to make those changes through the application menu. While not a drawback to the software, he says it did lengthen the learning curve.

Asked for his overall opinion, Norona says, "We were forced to upgrade, but now we're seeing the benefits."

JOBPAK 3000 6.1

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Can't We All Just Get Along?

HP 9000s, HP 3000s, Intel PC servers and networked Windows desktops all share resources in ways that save time and money for IT departments.

Dave Herbert
Product Marketing Manager, WRQ, Inc.

Many legacy IT resources continue to work very well on corporate nets. But as more HP 3000 and HP 9000 servers are placed on the same networks as Windows desktops and Windows NT servers, IT managers face the challenge of getting these different platforms to share available file and printer resources. Of course, the goal is to improve or refine LANs already in place, rather than force a costly overhaul.

This article explores the currently available LAN options that can help improve and refine your networks using HP 3000, HP 9000 *and* Intel systems. Over the years, four kinds of LAN protocols have been used for file and print sharing.

HP Resource Sharing

The specification was originally developed by HP as an early Server Message Block (SMB) implementation for the HP 1000 and HP 3000. HP Resource Sharing worked with HP's desktop product for DOS, Officeshare, to provide connectivity to host applications and if needed, the host's hard drive space and attached printers.

This was a proprietary solution requiring the use of TCP/IP over IEEE's 802.3 Ethernet specification, the older HP probe protocol and a DOS NetIPC interface for the client. Neither of these became accepted open standards for interoperability at least partially because of their dependence on each other.

While TCP/IP over Ethernet evolved into today's internetworking foundation, the original 802.3 specification gave way to the more common Ethernet II, originally called DIX or Xerox frame types. Because HP's Probe and NetPC both required running TCP/IP over the original 802.3, they too have faded from wide use.

Although the HP 3000 continues to provide these protocols today, 32-bit Windows client products are no longer available as vendors opted to abandon them in favor of newer APIs such as Winsock 1.1 and NetBIOS. However, several DOS and 16-bit Windows products that support TCP/IP over 802.3 and Ethernet II are still available. Because of the proprietary nature of this specification it does not provide much LAN interoperability.

Editor's Note: In this two part interoperability series, you'll learn how to get your HP 3000 working and playing well with others in HP-UX, Novell and Windows NT environments.

Network File System

NFS sprang from UNIX and became an Internet Engineering Task Force (IETF) standard in the late 1980's. Major strides have been made in recent years, such as the addition of POSIX compliance, to provide higher levels of interoperability between HP 3000 systems and UNIX with NFS.

NFS has also been made available through products like NFS/iX from Quest Software (Newport Beach, Calif.), with which the HP 3000 can become a NFS file server. Once running on the HP 3000 server, UNIX workstations can connect to it for access to disk and printer resources. By adding NFS client software to Windows desktops and servers, they too can access resources on the HP 3000. Upcoming Microsoft and third-party solutions are soon to be available for the NFS Protocol SMB and CIFS.

NetWare's Core Protocol

NCP client and server software is available for the HP 3000 (as NetWare/iX), the HP 9000 (as NetWare 3.1.2) and Windows desktops and servers. HP began shipping NetWare/iX with MPE/iX 5.0, which provided important interoperability for HP 3000s and Novell LANs running NetWare, IPX/SPX and the NCP protocol.

The current version of NetWare 3.1.2 for HP-UX will soon be replaced with Netware/9000, which is based on Novell's NetWare 4.1. Microsoft provides NetWare-compatible clients in Windows 9x and Windows NT. Core NCP and Novell Directory Services (NDS) are provided in Windows NT server, making it easier to share between devices on a NetWare network.

The HP 9000 also has a long history of making file and print sharing available. The first instance came in the form of NFS, which HP continues to refine and support. The second came by way of SMB networking that continues to evolve today.

Server Message Block

SMB and its most recent incarnation CIFS, emerged out of the LAN Manager NOS as an X/Open standard in the late 1980's and was adopted as Microsoft's standard for local area networking.

SMB servers and clients are available for the HP 3000, the HP 9000 and of course Microsoft desktops and servers, making it a very useful LAN protocol for integrating file and print services across these systems. The use of SMB-style networking has become an important alternative to the other forms of local area networking available. The product that provides SMB networking for the HP 3000 is called Samba/iX.

As more HP 3000 and HP 9000 servers are placed on the same networks as Windows desktops and Windows NT servers, IT managers face the challenge of getting these different platforms to share available file and printer resources.

Samba/iX is free open source software. Once Samba/iX is installed on a HP 3000, a Microsoft networked desktop or server can access that server using the SMB protocol. Samba/iX can be configured to look like a LAN Manager or a Windows NT server participating on the Microsoft network. The client portion of Samba/iX makes it possible for the HP 3000 to access other LAN Manager or Windows NT servers. For tips on using Samba/iX, see *HP Professional's* October issue, Page S-38.

Originally, SMB networking was provided by means of LAN Manager for UNIX (LANMan/X), which provided a LAN Manager server component for HP-UX and support for NetBIOS over TCP/IP (Internet Architecture Board's Requests For Comment (RFC) 1001 and 1002). This made it possible for DOS and Windows desktops to access file and print resources on the HP 9000 by using a NetBIOS redirector and SMB. Most recently HP has released a replacement for LANMan/X called HP Advanced Server/9000.

Third-party NFS and Microsoft-style SMB networking products such as Quest's NFS/iX, Samba/iX and WRQ's Reflection Suite have emerged as very useful ways of making HP 3000 file and print service available to both UNIX and Microsoft networks.

Now that you're up on the protocols, next month, Dave will help you determine where your LAN protocols should reside and what integration technology you need to use.

RELEVANT WEB SITES

Quest Software's NFS/iX information can be found at www.quests.com/html/nfs_ix.html.

Samba/iX source and binary code is available at jazz.external.hp.com/src/samba/index.html or www.sambaix.com

Information on HP Advanced Server/9000 and NetWare/9000 4.1 is available at www.hp.com/ibpprogs/gsy/advantage/aug96/news/advanced.html.

Go to www.wrq.com for information on WRQ's Reflection Suite and Reflection 3000 Connection.

For complete vendor contact information, go to

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at www.hppro.com.

APPLICATIONS DEVELOPMENT

RPG, COBOL Developers Deliver Thin Client Applications

Jacada Innovator enables new or existing applications written in RPG or COBOL to be deployed with Java or Visual Basic thin clients, eliminating character-based green screens. It introduces a messaging server that facilitates high-performance communications between the generated Java or VB client and RPG or COBOL server code without relying on the 5250 or 3270 data streams.

Jacada Innovator provides a thin client GUI builder that generates Java or Visual Basic client source code. It requires no special knowledge of event-driven programming or object-oriented design and requires no experience in Java or Visual Basic programming.

Pricing starts at $2,000 per developer license. Deployment pricing begins at $10,000 per server.

Contact CST, Inc., Atlanta, GA at (800) 773-9574.

PKZIP UNIX 2.10

Ascent Solutions' new release of PKZIP UNIX features a 32-bit algorithm, a self-extractor program, self-extractor password encryption and Year 2000 Compliance. Version 2.10 can zip and unzip files twice as fast as the previous 16-bit version. Encryption requires the end user to input a password in order to extract the compressed file. PKZIP UNIX version 2.10 supports SUN, Solaris, AIX, HP/UX, SCO, and LINUX.

Contact Ascent Solutions Inc., Miamisburg, OH at (937) 847-2374.

COM Explorer Manages and Repairs ActiveX/COM Files

4Developers' COM Explorer's 1.0 interface enables users to view, manage and repair ActiveX Controls, DLL Servers and EXE Servers. It provides a centralized view of COM objects and information on GUID, TypeLib, version and file information. Misbehaved objects such as objects with missing files left as junk in the registry are marked.

A Registry editor is integrated and an inventory report generator generates HTML or comma delimited text reports with a list of the COM objects installed.

It runs on Windows 95, 98 and Windows NT and sells for $129 (Single License), $350 (Site License) and $650 (Corporate License).

Contact 4Developers LLC, Sunnyvale, CA at (877) 353-7297.

DATA WAREHOUSING

Prism Suite Supports SAP BAPI

Prism Solutions, Inc. has announced that it is supporting SAP Business Information Warehouse in its new module in the Prism Executive Suite. The module is being developed to support SAP's BW Business Application Programming Interface (BAPI). It will allow organizations to load data from non-SAP R/3 solutions to SAP BW, giving them the ability to fully integrate information from across a distributed data environment.

The Prism Executive Suite includes: Prism Warehouse Executive, an integrated development environment; Prism Warehouse Directory, a comprehensive metadata directory; and Prism Quality Manager, that lets users audit, manage and improve the quality of information.

Contact Prism Solutions, Sunnyvale, CA at (408) 752-1888.

DISASTER RECOVERY AND SECURITY

Data Security and Encryption for Windows 95/NT

FolderBolt 3.0 secures and encrypts file folders and data for standard NT and 95 applications such as Explorer, My Computer, Network Neighborhood and e-mail. FolderBolt protects data in a shared computing environment, prevents access to data on unattended machines and secures confidential data stored on removable media such as Iomega Zip, Jaz, SyQuest, LS-120 and floppies.

Other features include "Self-Decrypting" files which are encrypted files that can be sent electronically and decrypted on any computer with or without FolderBolt and a Drop Box which is a shared folder that users may deposit files into, but only someone with the password may access.

Contact Citadel Technology, Inc., Dallas, TX at (800) 962-0701.

Check-Secure Laser Check Printing Security

Check-Secure is a programmable, removable, "flash" security device which allows users to load digitized signatures, logos, MICR fonts, barcode and other special fonts on-to removable "flash" devices (keys) which can be inserted and removed from Check-Secure. Insert "flash" (key) card prior to running a check printing job to overlay signatures, MICR font, etc. Once a print job is completed, remove the flash card and resources are unavailable.

Check-Secure works with most laser printer models of HP, Lexmark, IBM, Xerox, Brother and more. It can be ported to any desk-top laser printer.

Contact FORMation Mg, Irvine, CA at (800) 693-3933.

E-COMMERCE

Web Sense Filtering Software

Apexx Technology Inc. has integrated WebSENSE Web filtering software, file sharing and Spam filtering software to the TEAM Internet 100 series family.

WebSENSE enables businesses to control Internet browsing by blocking, monitoring and filtering individual web browsing to non-business related web sites. Simple File Sharing allows TEAM Internet to act as a Windows networking server on the LAN giving users the ability to retrieve, store and collaborate on files. Spam Filtering Software filters unwanted e-mail.

The TEAM Internet 100 Series and 300 Series also include the Internet Access Manager and are based upon the Linux kernel. Pricing starts at $1695.

Contact Apexx Technology, Inc. Boise, ID at (800) 767-4858.

LynkStation for Online Promotion

TriPolar Technologies' LynkStation is software to help businesses market themselves on-line.

LynkStation generates Web site traffic

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by offering free exposure to Internet users. E-mail addresses of visitors are automatically compiled into a mailing list database. Owners can take advantage of this mailing list and automatically send their message to every user. On average, a LynkStation can easily reach over 1,000 new users each week. It sells for $79.95.

Contact TriPolar Technologies Interlaken, NY at (888) SUN-NET1.

MESSAGING AND E-MAIL

MessageWise's 2MA 2.0

2MA, the Messaging Manager's Assistant for Microsoft Exchange, 2.0 features a new GUI, expanded event and service monitoring and customizable reporting options. 2MA's "Touchless" RPC architecture reduces deployment and maintenance costs and does not require the installation of server-side agent software.

2MA lets messaging managers monitor an enterprise-wide messaging system with multiple Exchange servers. A messaging manager can monitor the status of all Exchange services, track message queues, receive alerts and alarms and retrieve logs and statistics. 2MA periodically sends an RPC request for information to each Exchange Server, which transfers the activity data to the monitoring station.

2MA 2.0 is $995 per server.

Contact MessageWise, Inc., Ottawa, Ont. Can. at (613) 521-4377.

MULTIMEDIA

Art-Copy 5.0

Art Copy scans directly to fax, e-mail, FTP client or applications. Art-Copy 5.0 uses a flatbed scanner, slide scanner, or digital camera to send pictures via email or upload pictures directly to an FTP site.

Art-Copy sends images directly to one of six different destinations; printer, fax modem, email, ftp site, disk, or application. Place an image onto a flatbed scanner or connect a digital camera to the computer; specify how many copies, click on the appropriate destination button and Art-Copy scans and sends the image.

Art-Copy is $44.95 and supports Windows 95/98/NT and any TWAIN scanner, digital camera, or slide scanner.

Contact Jetsoft Development Company, Cincinnati, OH at (800) 374-7401.

NETWORK INTEGRATION

New EZcomm PCI 3270 and DCICUT Software

Affinity Systems' new EZcomm PCI Bus 3270 Plug and Play adapter is compatible with any PC with a 33-MHz PCI Specification 2.0 or higher. It works with software written for the IBM 3278/79 Advanced Coax adapter and Attachmate/DCA IRMA coax adapters. Software for IBM/IRMA compatible adapters can run on EZcomm adapters without modification

DCICUT 3270 emulation software is a low-cost, full-featured 3270 CUT Windows 3.X, 95 and 98 emulation software, emulating 3270 terminals Models 2 through 5. The software supports file transfer and DDE (Dynamic Data Exchange) links.

EZcommPCI 3270 is available now for $349 or bundled with DCICUT software for $399. DCICUT software with installation diskette, a user manual and FREE telephone installation support is $129.

Contact Affinity Systems, Lansdale, PA at (800) 432-1774.

STORAGE

VERITAS Storage Resource Management

VERITAS Storage Manager enables corporate and workgroup IT managers to turn management of critical storage resources into a proactive, policy-driven operation that maximizes the availability of business data. SAN modules add optimal control of Fibre Channel switches and hubs to deliver a SAN-enabled SRM solution for cost-effective, consolidated management of SAN environments.

A SAN visualization component provides consolidated, graphical visualization to facilitate monitoring and configuration of SAN components. A Storage Manager module for a Vixel Fibre Channel managed hub notifies administrators when problems are detected, and enables users to perform in-context launching of Vixel's management software for quick problem resolution.

It is available for Windows NT, Solaris, HP-UX and AIX. Pricing starts at $25,000.

Contact VERITAS Software Corporation, Mountain View, CA at (650) 335-8000.

Procom's New AIT and DLT Autoloaders

Procom Technology's new AIT ($6,145 - $11,085) product line includes a four-cartridge autoloader generating up to 200 gigabytes of compressed capacity, and a dual-loader minitower configuration that stacks two autoloaders in a single compact cabinet. The mini-tower provides up to 400 gigabytes of capacity in a small footprint automated storage solution.

The DLT autoloaders offer more than half a terabyte of available capacity. When equipped with DLT4000 technology, the eight-cartridge Datastream 418 ($7,975) delivers 320 gigabytes of capacity, while the DLT7000-based Datastream 718 ($13,185) offers up to 560 gigabytes, with sustained data throughput of 36 gigabytes per hour.

Contact Procom Technology, Inc., Irvine, CA at (949) 852-1000.

Robotic Library Mgr. Integrated into Legato SmartMedia

MTI Technology Corp. and Legato Systems Inc. have announced a worldwide, multi-year extension to their reseller and development agreement.

Core technology from MTI's RLM product will be integrated with Legato's media management product, SmartMedia. Legato SmartMedia manages the base of removable media and storage devices by maximizing hardware utilization through library sharing, and lowers administrative and operational costs associated with media and device management. RLM employs a visual on-screen format to remotely monitor and manage libraries distributed across heterogeneous storage environments.

Contact MTI Technology Corp., Anaheim, CA. at (800) 999-9MTI.

SYSTEM AND NETWORK MANAGEMENT

Performance Gallery Gold

Performance Gallery Gold utilizes performance data collected from either a HP 9000 or HP 3000 server and enables the system administrator to create clear graphic presentations of their system's CPU utilization, workload activity, response times, disk activity and more. A dual Y-axis enables the system administrator to perform correlation analysis.

It has drill down support via linked chart templates plus snap shot tables that show information for a specific data sample. It ships with over 40 preconfigured graphs with the option to create custom graphs. It is Windows 95/NT uninstall compliant and can handle up to two GB of data per graph.

Contact Lund Performance Solutions, Albany, OR at (541) 926-3800.

LanTrace for LAN Protocol and Analysis

LanTrace is $599 software that provides Windows NT/95-based LAN and Internet protocol analysis and monitoring. A helicopter view of network traffic extends down to the detailed view of packet contents. Product functions include packet capture, protocol decode, traffic generator, pre-capture and post-capture filters, traffic matrix, host table, network statistics, triggers and alarms.

It has a graphical interface and charting options, use of real host and site names throughout (DNS query), and details on Internet side access (Traffic Matrix). LanTrace includes Internet Protocol (IP) session analysis that allows the Traffic Matrix to show who is looking at what Web site.

Contact Sunbelt Software Distribution, Clearwater, FL at (800) 395-9385.

WORKFLOW AND DOCUMENT MANAGEMENT

PSSoftware's RIMS Studio 7.01

RIMS 7.01 allows users to file email records with a drag and drop technique that is transparent to the user. Users can store, manage and search for imported and scanned images also held in the repository. Through these drag and drop and scanning/importing techniques, RIMS 7.01 users can manage other electronic records, such as word processing, presentation or spreadsheet files.

RIMS Studio 7.01 integrates with existing electronic document management solutions, including PC DOCS' DOCS Open and FileNet's Panagon IDM. RIMS Electronic Record Repository is stored transparently on a Windows NT drive. Directories are automatically created and mapped to the NT drive, denying access to non-authorized users.

Contact PSSoftware, Ottawa, Ont., Can. at (613) 226-5660.

YEAR2000

New Features In Year 2000 Network Advisor

The Year 2000 Network Advisor is an interactive, online database that catalogs compliance information of more than 17,000 desktop, midrange systems, network hardware and software products from more than 300 manufacturers.

The Personal Product Portfolio(SM) feature replaces Custom Report and includes "Sortable View" and "Quick View." Two new data fields, "Weighting Factor" and "User Comments," have been added. The "Statistical Summary Report" feature enables users to do an online cross-tabulation of information in their portfolios. The Year 2000 Network Advisor now allows users to download compliance information in multiple formats. Lastly, Infoliant improved the strength and accuracy of its search engine.

Contact Infoliant Corporation, Pittsburgh, PA at (412) 391-8803. ◆

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NEW FROM HP

APPLICATION DEVELOPMENT

Changengine 3.0 is a scalable Internet software product suite for integrated enterprise process management. New features include the Business Console, which includes a Java language-based process design tool for process modeling and tracking. It also separates data, resources and rules in a given business process, which enables independent modification without expensive re-coding. HP has also introduced a three-tier development environment for integrating Changengine with existing client and server applications.

url: www.hp.com/go/changengine

NETWORK INTEGRATION

New ProCurve Gigabit-LX Module extends ProCurve 8000M, 4000M and 1600M switch connectivity up to 5km though a single-port Gigabit-LX (IEEE 802.3z) connection. It is priced at $1,999.

url: www.hp.com/go/procurve

NETWORK MANAGEMENT

New Internet Advisor WAN Software adds ISDN, IP and frame-relay trouble-shooting capabilities which includes data traffic running at network rates up to DS3/E3, an ISDN B-channel tracker, decodes of Real-Time and Real-Time Control protocols, support for Multi-link PPP protocol, support for Van Jacobsen LAN traffic on access links, TCP Tunneling decode and the ability to monitor ATM DXI traffic across T1/E1 links.

url: www.hp.com/go/internetadvisor

Firehunter 1.5 is the latest version of HP's end-to-end service-management tool for ISPs and enterprise/IT innovators. New features include Web access to service-quality reports, right mouse click for context-sensitive menus, graphs that export from the GUI to GIF files, graph zoom and scroll, remote-agent software for Solaris Intel systems and up to 300 percent improvement in startup and run time while reducing memory requirements by 30 to 40 percent.

url: www.firehunter.com

PERIPHERALS

Two New LaserJet Printers The LaserJet 1100 replaces the LaserJet 6L and features 33 percent faster printing and twice the memory for an estimated price of $399. The LaserJet 1100A adds complete copying and scanning capabilities for an estimated price of $499.

JetDirect 500X Print Server integrates Internet printing protocol to enable printing across the Internet and All-in-one peripheral support so users can scan and send documents via the network. It networks up to three peripherals, adjusts for 10Base-T or 100Base-T and supports Token Ring.

url: www.hp.com/net_printing/jetdirect

SERVERS

New HP 9000 rackable UNIX servers are tailor-made for ISPs. Twenty A-Class servers fit into one 2-meter rack with up to 360GB disk capacity, 40GB memory and 20MB cache per rack. The R-Class provides 24,102 SPECWeb96 per rack. Each server individually provides 4GB and 9GB disk capacity, two disks drives per server and 3GB of memory, 2MB and 4MB cache and HP secure Web console and Web QoS technology.

url: www.hp.com/go/isp

SERVICES

HP's new interactive backup solutions Web site makes automated backup technology more accessible by offering demos from HP's software backup solutions partners, a demo of HP TopTools for Backup (downloadable from the Web) and an interactive network configuration guide. There's also a weekly sweepstakes drawing for a HP CD-Writer 8100i.

url: www.hp.com/go/automated

HP's combination lease program for LaserJets and Brios is designed to offer small- to medium-sized businesses high-quality printing and computing at reasonable prices. The new program pairs a LaserJet 3100, 4100 or 5100 with a Brio 7111N, 7134B or 7174 for a range of $59 to $99 per month.

url: www.leasehp.com

STORAGE

HP's new SureStore T20 tape backup is compatible with most common operating systems used in small businesses and offers 20GB of tape storage. It's bundled with Stac, Inc.'s Replica Backup software and provides HP Colorado Backup II for Windows 95 and NT workstations. A driver is provided that allows users to apply the built-in backup utilities of SCO UNIX.

url: www.hp.com/tape/colorado

WORKSTATIONS

The Vectra VL PC is based on Intel's Pentium II 450MHz processor and 440BX AGPset with 100MHz front-side bus. It's loaded with Matrix Millennium G200 AGP 2X graphics, 8MB SGRAM, DVD drive and a SCSI subsystem. Estimated price is $2,499.

url: www.hp.com/go/vectra

A new PA-8500 processor-board upgrade for HP Visualize workstations is customer installable on Model C200 and C240 UNIX systems. It supports all existing components including I/O cards such as EISA, PCI/GSC, 10/100Base-T and UltraSCSI, graphics cards, disks, RAM and monitors.

url: www.hp.com/go/technical

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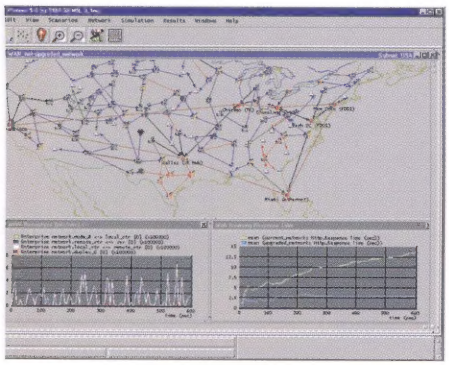

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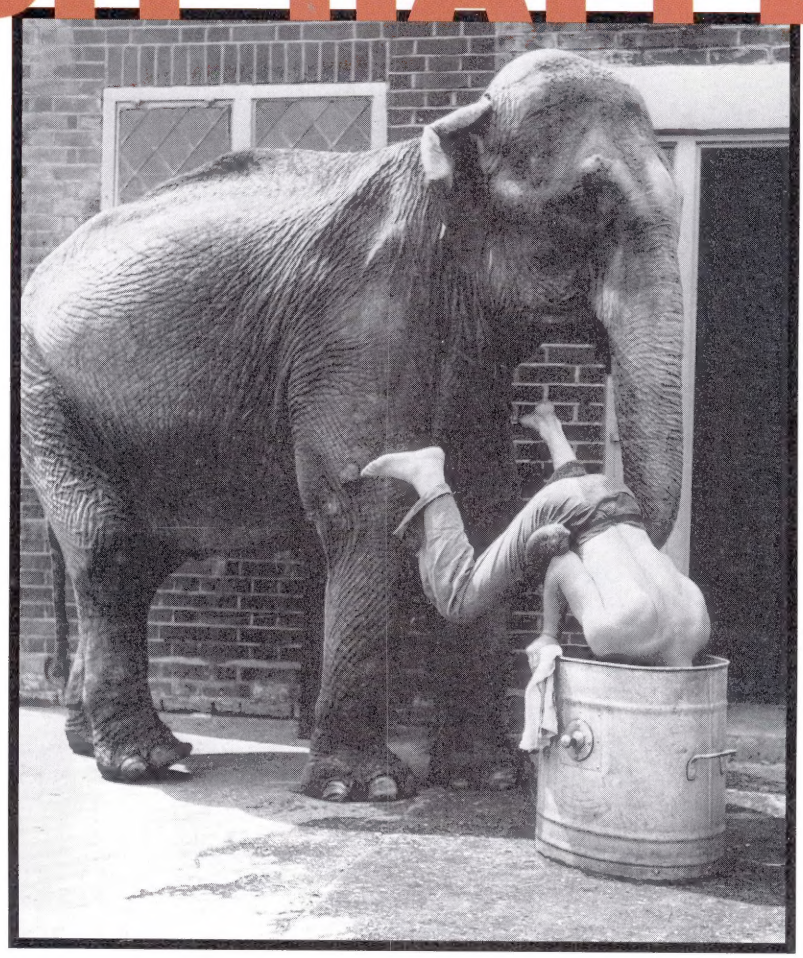

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